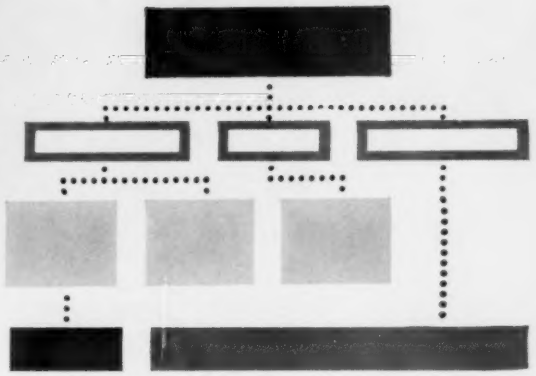
JULY, 1958

American Engineer



This article covers basic problems involved in the setting up of a new engineering department or in creating a more smoothly operating established one. First, the author reviews how the engineers themselves should be selected for employment within the company and what should be known about them before such selection is made. Psychological testing is discussed as well as job descriptions, organizational charts, inventory summary charts, and replacement charts.

The Selection, Appraisal and Training of Your Engineering Department

By Ralph M. Hartmann, Manager, Training and Development, The Quaker Oats Company

Pictured is Dr. Clark A. Dunn, P. E., Oklahoma State University educator, who is the new president of the National Society of Professional Engineers. Writing on page seventeen of this issue, Dr. Dunn names three requirements for a successful organization: clearly defined objectives, an informed membership, and effective incentives. In a short article, Dr. Dunn relates how his administration will work toward fulfillment of these goals.

A Compilation of Engineering Union Membership

In this issue is a complete compilation of engineering unions in the United States with the number of members belonging to them, and the plants represented across the nation. This is the first compilation of this nature ever attempted and the material will be of considerable reference value to those interested in the problem of engineering unionism.

How to Make Technical Writing Easy

Here is an article on the increasingly important subject of technical writing. With today's complex engineering, the professional engineer must be able to write well. This story is written by Professor W. P. Albrecht, chairman of the Department of English Language and Literature, University of Kansas, and Associate Professor Harold Orel of the same Department.

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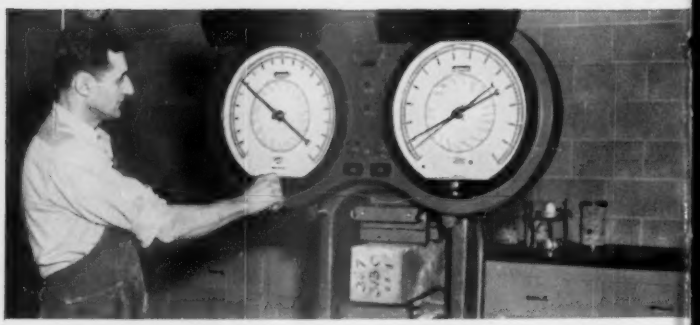

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Letters to the Editor

Genuine Pleasure . . .

Dear Editor:

Reading the Honorable Ralph E. Flanders' article in the May issue of the AMERICAN ENGINEER was a genuine pleasure to me.

It is gratifying to know that we have in our United States Senate a man so ably qualified to write so understandingly the basic truth.

Please send to me at your earliest convenience approximately a dozen reprints of this article which I should like to mail to some of my good friends in educational circles who might not otherwise be afforded the opportunity to see the problem through an engineer's eyes.

Harry L. Conrad, Jr., P. E.
Lansing, Mich.

Toastmasters Club . . .

Dear Editor:

I was very interested in the article in the May issue of the AMERICAN ENGINEER on Page 35 in which was stated the Missouri Chapter has started what was believed to be the first Engineers Toastmasters Club. This is to advise you that the Dallas Chapter of TSPE has sponsored an Engineers Toastmasters Club for over a year. The Engineers Toastmasters Club, Dallas, Texas, is chartered as Club No. 2304 which is a much smaller number than that of the Missouri Chapter's Charter.

The Engineers Toastmasters Club of Dallas meets on the first and third Thursday evenings of each month. We emphasize the desirability of guests at our meetings, and we make sure that everyone in attendance advances himself by making either a formal or informal talk. On special occasions we invite our wives to attend.

The engineers who have been participating in the Engineers Toastmasters Club of Dallas have gained much in the way of poise, ability to think and talk before people, and to preside over formal meetings. We feel that we are contributing much to the development of leaders in the engineering profession at Dallas. (See page 35—Ed.)

Walter P. Glancy, P. E.
Dallas, Tex.

Agrees with Comments . . .

Dear Editor:

In my opinion the comments concerning the NSPE and its functions made by John M. Graham in the "Letters to the Editor" section of the March issue of the AMERICAN ENGINEER express very well the doubts and misgivings entertained by a great majority of NSPE members.

I thought that Mr. Graham's statement that "our previous complete silence on the subject of the surplus, and our echoing of the employers claims of shortage have not been overcome by the statement issued at the meeting at Bismarck" was particularly timely, especially in view of the fact that many engineers with years of experience are now having difficulty finding suitable employment. On the other hand, the employers are anxious to have new graduates, since they can work for less money, and are more easily shaped to the form the employer wants them to fit.

I also think that the idea of submitting a ballot to the members of NSPE in order to obtain their opinion on some of these important questions is a good one.

The material printed in the other fifty odd pages of the AMERICAN ENGINEER will have little significance until the leaders and members of NSPE find the answers to some of the questions posed in these letters, similar in content, which are printed month after month in the AMERICAN ENGINEER.

Carl L. James, P. E.
Dayton, Ohio

Letter to Ike . . .

Dear Editor:

The following is a letter which I recently wrote to President Eisenhower:

"As an active participant in engineering activities, I am greatly concerned with the status of engineers, particularly their employment stability.

"While it is true that there is a shortage of young engineering graduates as well as shortages in certain specialized fields, the demands for engineers, as a whole, is a fluctuating one dependent for the most part on the status of government contracts.

"The plight of the engineer is an insecure one even in the light of artificial publicity of shortages because firms overexpand their staffs in preparation for specific contracts and then have mass reductions of personnel at contract termination. The tendency always seems to be to rush to meet urgent deadlines, then the engineer works himself out of a job.

"Before the advent of Sputnik there was marked evidence of recession. There was a great need for government contracts in order to keep trained staffs on company payrolls; the stock market began to take its toll. Now, suddenly, the tables are turning and there will be a new drive to beat the clock, regardless

(Continued on page 49)

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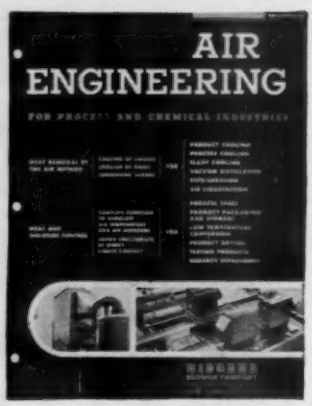

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(Circle 2 on Inside Back Cover)

American Engineer

JULY

1958

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—Benjamin Franklin

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PROFESSIONAL NEWS IN CAPSULE FORM

A Roundup of Late Events for Professional Engineers

G. Ross Henninger Named Head of Ohio Institute

G. Ross Henninger, associate director of Engineering Extension at Iowa State College, has resigned to become president and member of the board of directors of Ohio Mechanics Institute and College of Applied Science, Cincinnati, Ohio.

He took over his new position on June 1. A two-year technical college with curricula accredited by the Engineers Council for Professional Development, the student body numbers about 2,500 night students and about 375 day students.

Prof. Henninger is a member of the National Society.

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Engineering Examiners To Meet August 21-23

The thirty-seventh annual meeting of the National Council of State Boards of Engineering Examiners is scheduled for August 21-23 at the Hotel Schroeder, Milwaukee, Wis.

Mayor Frank P. Zeidler will welcome the delegates to the City of Milwaukee at a luncheon on August 21. Governor Vernon W. Thomson is slated to speak at the opening business session.

At the annual banquet the Distinguished Service Certificate of the National Council will be awarded to several members. New officers will also be installed at this time. President Allen S. Janssen, an NSPE member, will serve as master of ceremonies.

△ △ △

Army Engineers Honor William G. Huxtable

In recognition of his outstanding service in the flood-control field during the past forty-five years, the U. S. Army Corps of Engineers recently presented William G. Huxtable of Arkansas with a certificate and citation signed by Secretary of the Army Wilbur M. Brucker and by Major General Emerson C. Itschner, chief of engineers.

Mr. Huxtable, an NSPE member, is chief engineer for the St. Francis Levee District in eastern Arkansas.

"Eraser!"

E. C. Itschner Installed As President of SAME

Major General E. C. Itschner, chief of U. S. Army Engineers, was installed as president of the Society of American Military Engineers at the thirty-eighth annual meeting recently at Fort Belvoir, Va. General Itschner, the first chief of Army Engineers to hold the presidency since 1927, succeeds last year's president, Rear Admiral H. Arnold Karo.

In accepting the presidency, General Itschner, an NSPE member, spoke of the "vital importance of military engineers to the preservation of national existence and of Western civilization." He described the Society as an organization which cuts across all the Armed Services and reaches deeply into the ranks of civilian engineers. "The Society is," he said, "in a unique position to contribute simultaneously to both economic and military technological advancement of the Nation."

△ △ △

New England Traffic Seminar Set for Sept.

A Freeway Operations Seminar for New England has been scheduled for Northampton, Mass., September 24-26, according to the Institute of Traffic Engineers.

This seminar, which will discuss traffic operations on freeways and expressways is the third in the current series. All of these seminars, which are sponsored by the Institute, are designed to acquaint public officials with problems of operating limited access facilities such as those to be built under the new Federal Highway Program.

Invitations will be extended to traffic engineers, planning and design engineers, enforcement supervisors, and other city, county and state officials who have or expect to have responsibility for planning or operating a freeway or expressway.

Attendance will be drawn from the six New England states, from Upstate New York, and the Canadian Provinces of Quebec and Ontario.

NSF Releases Statistics On Immigrant Workers

Almost 60,000 immigrants classified as professional, technical, and kindred workers entered the United States for permanent residence during fiscal years 1953 through 1956 (July, 1952-June, 1956), constituting slightly over six per cent of the 900,000 total immigration for those years. Some 12,600 of the professional workers were engineers or natural scientists.

The number of the immigrants in the professional group increased annually from 13,000 in 1953 to 19,000 in 1956, although the rate of increase was not as great as that for all immigrants. Only a small proportion, about seven per cent, of all professional workers entered the country with a first-preference quota visa, authorized to persons of specialized skills whose services are urgently needed in this country.

This information is contained in a report released by the National Science Foundation entitled *Immigration of Professional Workers to the United States—1953-1956.*

Engineers constituted the largest occupational segment of the 60,000 in the group of professional immigrants; nurses were second, and teachers, fourth, and natural scientists, fifth. The separate occupational segment of technicians, such as designers, draftsmen, and radio operators, each represented a small proportion of the total but when counted together outnumbered the teachers.

△ △ △

Management Society Elects Carroll Pres.

Phil Carroll, a member of NSPE from Maplewood, N. J., has recently been elected 1958-59 president of the Society for Advancement of Management.

The Society for Advancement of Management, with national headquarters at 74 Fifth Avenue, New York City, operates through 200 chapters in the major industrial and university centers throughout the United States and Canada, and maintains contact with over 50,000 management executives in industry, business, government, and education. It is a non-profit professional organization for management education and development, with national, regional, and chapter activities.

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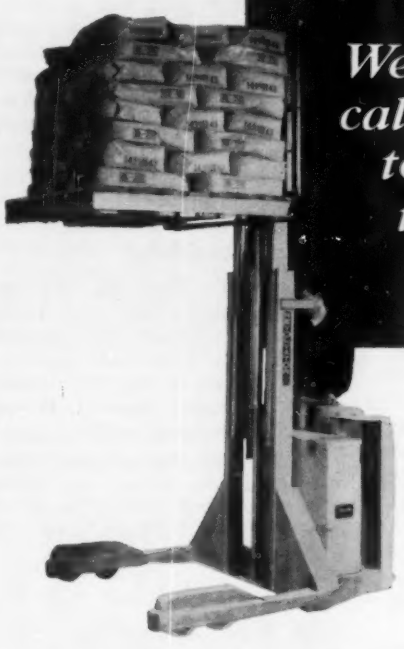

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Systems Engineering Seminar August 18-23

A number of prominent speakers from universities, research establishments, military agencies, and industry will highlight The Pennsylvania State University's first Seminar on Systems Engineering and Missiles Operations Research to be conducted at University Park, Pa., August 18-23.

Penn State's one-week seminar is planned for the presentation of the status of operations research and systems engineering in which the underlying principles are described and their application demonstrated by considering a typical guided missile systems analysis.

△ △ △

Guy Kelcey Receives Honorary Doctorate

Guy Kelcey, partner in the Newark, N. J., firm of Edwards and Kelcey, consulting engineers, received the honorary degree of Doctor of Engineering at the forty-second commencement exercises of Newark College of Engineering. He is the eleventh person to have received the degree since the college first granted honorary doctorates in 1919. Dr. Robert W. Van Houten, president of the college, officiated.

According to the citation read at the exercises, "it seems eminently fitting . . . that Newark College of Engineering, in recognition of his outstanding record as an engineer dedicated to solving some of the most complex and perplexing transportation problems of our age, confer upon this dynamic, but always modest man, Guy Kelcey, the degree of Doctor of Engineering."

Mr. Kelcey is an NSPE member.

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Annual ARBA Conference Slated for September

The sixth annual National Highway Conference for County Engineers and Officials, sponsored by the American Road Builders Association, will be held at the Concord Hotel, Catskill Mountain resort on Kiamesha Lake, in upstate New York. The dates are Sept. 29-30 and Oct. 1.

One thousand delegates are expected to attend the meeting to hear several of the nation's highway experts discuss developments as related to county and local highway administration. Lewis A. Lush, superintendent of highways of Sangamon County, Illinois, and president of the ARBA County and Local Roads Division, will preside.

△ △ △

Lambert Lind Named Special Assistant

Lambert L. Lind, Jr., principal electrical engineer in Ebasco Service Incorporated's Design and Construction Division, has been appointed special assistant to Roy W. Johnson, director, Advance Research Projects Agency, Department of Defense.

Mr. Lind has been granted a leave of absence from Ebasco, engineering, construction and business consulting firm, to undertake this assignment. He is an NSPE member.

△ △ △

NSF Now Accepting Proposals for Funds

The National Science Foundation has announced that proposals and requests for funds are now being accepted for the support of 1959 Summer Institutes for the supplementary training of high school and college science and mathematics teachers. Universities and colleges which wish to sponsor such institutes are invited to request information from the Program Director for Summer Institutes, National Science Foundation, Washington 25, D. C. Deadline for the submission of proposals in final form is August 1, 1958.

A total of 125 institutes are scheduled for the summer of 1958 in forty-seven states, the District of Columbia, Alaska, Hawaii, and Puerto Rico. Increasing Congressional support of the program makes it desirable for the Foundation to plan now to triple the number of institutes to be held during the summer of 1959. Specifically designed by the Foundation to encourage a national policy to improve subject-matter mastery of science and mathematics teachers, institutes are planned and conducted by colleges and universities and commonly last from six to ten weeks.

△ △ △

Dr. D. B. Steinman Gets Degree at St. Lawrence

At Commencement exercises in June, Dr. D. B. Steinman, internationally distinguished bridge engineer, received the honorary degree of Doctor of Humane Letters (L.H.D.) from St. Lawrence University. He now has twenty doctorate degrees, including doctorates in Philosophy, Science, Engineering, Humanities, Literature, and Laws.

Dr. Steinman, NSPE's first president, is now engaged on the design and construction of an intercontinental bridge over the Bosporus to join Europe and Asia, also a bridge over the Tigris River at Baghdad, and three international bridges joining U. S. and Canada. He recently completed the $100,000,000 Mackinac Bridge in Michigan, the world's largest bridge project to date. A U. S. postage stamp honoring the Mackinac Bridge was issued in June.

△ △ △

200 Technical Papers Scheduled at WESCON

A schedule of more than 200 technical papers to be presented in forty-two sessions of the 1958 Western Electronic Show and Convention has been announced by Robert C. Hansen, technical program chairman of the August event.

The technical convention of WESCON, presented by the co-sponsoring Los Angeles and San Francisco sections representing the seventh region of the Institute of Radio Engineers, will be staged during the four days of WESCON, August 19-22, in the Ambassador Hotel, Los Angeles. The concurrent exhibit of electronics equipment and services will occupy more than 900 display booths in the Pan-Pacific Auditorium plus four special pavilions.

Co-sponsor of WESCON is the West Coast Electronic Manufacturers Association.

General Electric Gives Teacher Fellowships

To heighten their ability to teach science and mathematics, 300 school teachers will return to college campuses for six weeks this summer on fellowships provided by the General Electric Educational and Charitable Fund.

The teachers, selected from thirty-eight states, have been awarded expense free summer fellowships in six universities and colleges.

Half of the teachers will study physics and chemistry in programs at Union College, Schenectady, N. Y., Syracuse University, Syracuse, N. Y., and Case Institute of Technology, Cleveland, Ohio.

The other 150 teachers will study mathematics at Rensselaer Polytechnic Institute, Troy, N. Y., Purdue University, Lafayette, Ind., and Stanford University, Stanford, Calif.

General Electric initiated the series as part of its extensive support of education, and to date more than $1 million has been invested in these programs. The Educational and Charitable Fund pays traveling expenses for the teachers from their school to the college and return, provides board and lodging while attending the sessions, and tuition and fees in connection with the fellowships.

Courses in the six colleges are conducted by their respective faculties and are designed to bring teachers up-to-date in their fields in instruction. Trips are made to General Electric laboratories and plants in the areas of the schools, and company engineers, scientists and executives give talks pertaining to their special fields. The field trips give teachers an opportunity to see the importance industry places on application of the subjects they teach. The programs have stimulated interest and enrollment in science and mathematics courses by pupils of the participating teachers.

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'Liberalized' Education Urged for Engineers

"It is time" that engineers be considered men and women of "sensibilities" whose growth "should not be stunted by educational methods designed merely to turn out well-trained technicians," James H. Campbell, senior vice president of Consumers Power Co., Jackson, Mich., said recently.

Speaking on the Michigan State University Campus at the closing dinner of the Great Lakes District Meeting of the American Institute of Electrical Engineers, Mr. Campbell warned against graduating from the nation's colleges engineers who are little more than "clever gadgeteers." He called for a "liberalized" education containing the humanities in an undergraduate program of at least five years.

A liberal education, he said, will "pay tremendous dividends" in developing engineers as leaders and organizers of men in industry and society.

"Engineers," he said, "should be cognizant of the human as well as the mathematic equation. In the positions and responsibilities they will hold in the coming space age, their interests should radiate beyond their technical activities."

At present, he said, engineers, "steeped in technical training" too often find themselves "isolated" from human affairs.

They are more likely to have narrower scopes and be more isolated from human activities than other professional men and women, he said. One important reason for this, he pointed out, is that universities and colleges are trying "to squeeze into four years of intensive engineering education" what students of other major professions receive in five, six or seven years of study.

"Lengthening of undergraduate programs for engineers to at least five years with the inclusion of more of the humanities, seems indicated," he said.

△ △ △

Warning Issued for Teen-age Rocketeers

Teen-age rocketeers are maiming and injuring themselves at an alarming rate, the National Fire Protection Association has warned.

Urging a complete ban on the amateur making and launching of rockets until safe sites and qualified supervision are provided, the organization released a report on rocketry casualties compiled by its Fire Record Department.

The new "firecracker craze" has claimed a number of lives already. During a six-week period from March 1 to April 15, eighty-four children and two adults were maimed or wounded, according to reports reaching the NFPA. And the Association estimates this count is not more than one-half the actual number of rocketry casualties during the period.

Sixty-two of the eighty-four children were of the 13- to 16-year old group, while eight were below and fourteen were above it.

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(Circle 7 on Inside Back Cover)

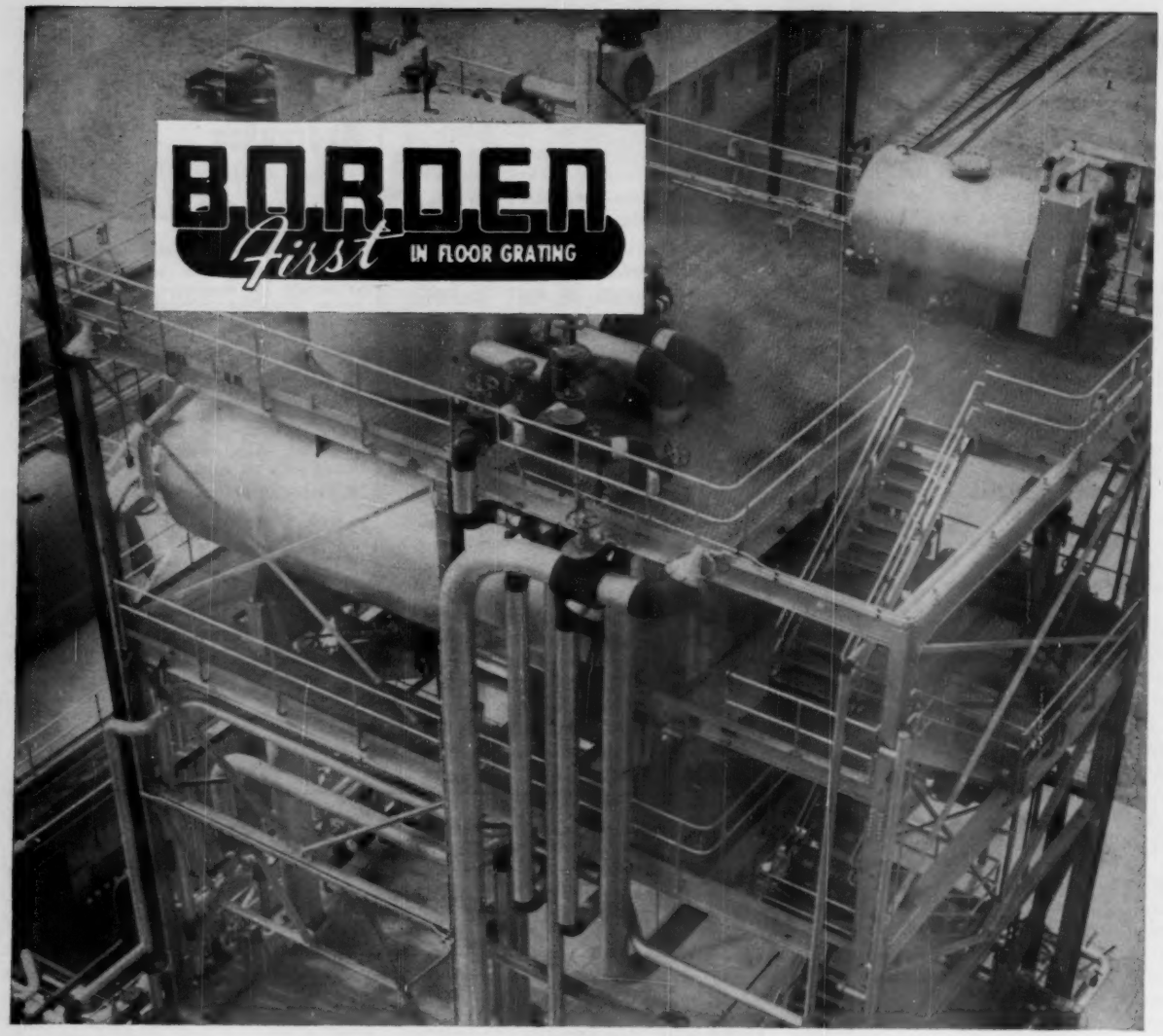
AEC Reports Increasing Interest by Students

Lewis L. Strauss, chairman of the Atomic Energy Commission, has reported that United States students and teachers are displaying increasing interest in all phases of atomic energy. A substantial growth in interest is indicated by the large numbers of requests for educational material coming to the Commission.

Currently, requests for materials are coming in at a rate nearly seven times that of 1954. In each of the last three years the rate has nearly doubled that of the previous year.

During the first four months of 1958 the Commission received 15,120 requests for materials, an indication that the 1957 total of 18,815 requests will be greatly exceeded this year. Totals for earlier years were 10,407 in 1956; 6,419 in 1955, and 5,600 in 1954.

The increases are believed to be noteworthy in relation to the effort being made on many fronts to strengthen and enlarge science programs in the nation's schools.



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(Circle 8 on Inside Back Cover)

American Engineer

The Magazine of the Registered Professional Engineer

VOLUME TWENTY-EIGHT NUMBER 7

By
RALPH M. HARTMANN,
Manager, Training and Development,
The Quaker Oats Co., Chicago, Ill.

The Selection, Appraisal and Training of Your Engineering Department

SINCE we are to discuss the development of the professional engineer and the engineering organization, I think we should have, as a point of reference, a definition of a professional engineer. I find there is no one concise definition available. His "basic duty" appears to consist of the performance of work requiring knowledge of an advanced type in a field of science or learning, customarily acquired by a prolonged course of specialized instruction and study. On the other hand, the mere possession of a degree in engineering surely does not make a man a

—Photo by U. S. Steel

Product development requires skilled engineering. Today, industry employs one engineer for less than forty workers.

professional engineer; and, conversely, an individual may certainly do professional work without having a formal education.

So that you are able to visualize the person I have in mind as I make reference to the professional enginer, I see a dedicated man. One who uses his skill and knowledge to give the best possible service. This man certainly adheres to the highest standards of conduct established by his profession. He is a "self-energized" person. Many of his rewards come from within himself. He has "drive" and great capacity for work coupled with the constructive direction of personal effort. Most important, he thrives on knowledge, and therefore when I see an engineer engaged in productive activity, and at the same time is providing for his continuing self-development and education, then I see a professional engineer.

In this discussion I shall present some thoughts as to why it is necessary to provide for further development of the engineering organization, and then try to set forth the various elements of a development program for engineers.

Why Further Development for Engineers?

Let us start at the beginning. Why do professional engineers need further development? What is its purpose? Some people may feel that since a professional engineer has been trained in college or through subsequent experience, he does not require additional attention.

Much has been written about a current and future shortage of engineers in this country and there is some difference of opinion as to the shortage being real or imaginary. It would seem that the demand for engineers must slow up in the near future, but Philip D. Reed, chairman of the Board of the General Electric Company, recently stated that, of the 250,000 persons now employed by G. E., over 80,000 are employed in the production of items that were not in existence prior to World War II. It was the engineer and scientist who brought their products into being.

To continue to make industrial progress at this rate; with our apparent shortage of engineers, will require *further development of present engineers*, as well as, making more effective use of all engineers in the future.

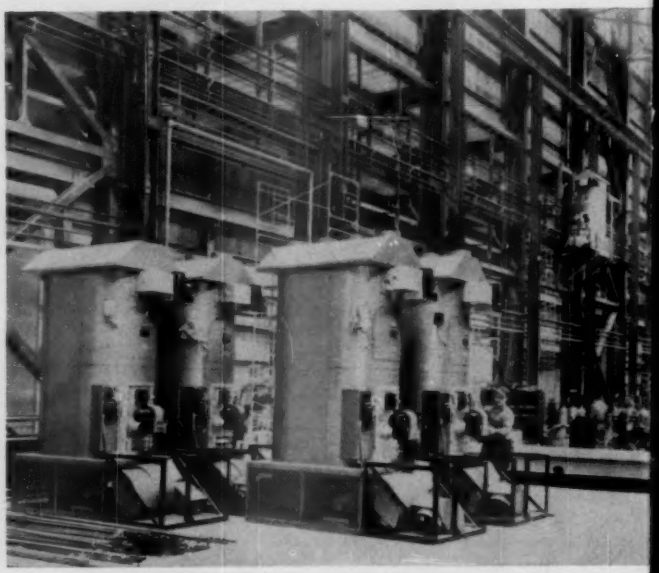
In 1900, industry employed one engineer for every 400 workers. Today industry employs one engineer for less than forty workers.

Most industrial organizations are concerned with finding a solution to the problem of controlling the motives, goals, and attitudes which characterize and notivate engineers. Training can modify these factors to improve the efficiency of the engineering organization.

A powerful incentive for an engineer is the opportunity to work at or near the peak of his capabilities, coupled with the opportunity to grow and gain experience. Engineers like to invest their own careers where there is a chance to grow. Continued training helps make this possible.

It has been aptly stated that "education is a journey, not a destination." A college education in engineering is an indication that a man has probably learned enough to earn while he continues to learn. It follows, therefore, that the employee should be encouraged to continue his education and self-development.

And for those engineers who wish to do management or



Twenty-eight direct-fired oil heaters will heat the new plant of the Foster Wheeler Corporation in Pennsylvania. In addition to technical training, company engineers should get the kind of experience they will need to develop the skills and abilities required of modern-day executives.

administrative work it has been found that most universities are still not set up to give a man the technical training for an M.S. or Ph.D., and include courses in engineering management and administration. Science and engineering are making such rapid progress that it becomes increasingly imperative for our colleges to teach fundamentals; and in most instances specialization must be deferred until the student is trained on the job.

ENGINEERS do not ordinarily get the kind of training which they need to develop the skills and abilities required of modern-day executives. Their on the job experience is

usually too limited and too specialized to qualify for administrative positions. Special training must be provided.

The above are only a few of the reasons why provision must be made for the continued training and development of the engineering organization.

Quite often early methods of developing engineering talent were largely accidental. Engineers and supervisors were assigned projects and given promotions more or less on the basis of informal opinions and judgments—usually that of the supervisor.

Promotion was in some cases a reward for faithful service—for "Keeping One's Nose Clean;" for being friendly with the boss. In some cases recognition and promotion were based on competence but there was wide variation in what was considered competence.

It was the unusual company that anticipated its future engineering requirements in time to do anything about it with the result that:

Engineers were sometimes upgraded before they were ready and individuals were moved into jobs for which they had no training. The engineering organization plans were warped frequently to fit the pattern of development of individuals.

Today, there is widespread recognition of need for a more planned, coordinated approach to development of the engineering organization. We must make plans and explore techniques for the selection, appraising, and developing of engineering talent. To date, there has been no scientific way to do this. Some scientific methods have been used on parts of the over-all problem, but we are still faced largely with the necessity of employing human judgment to arrive at an answer. Therefore, we are discussing here a systematic, but not a scientific approach.

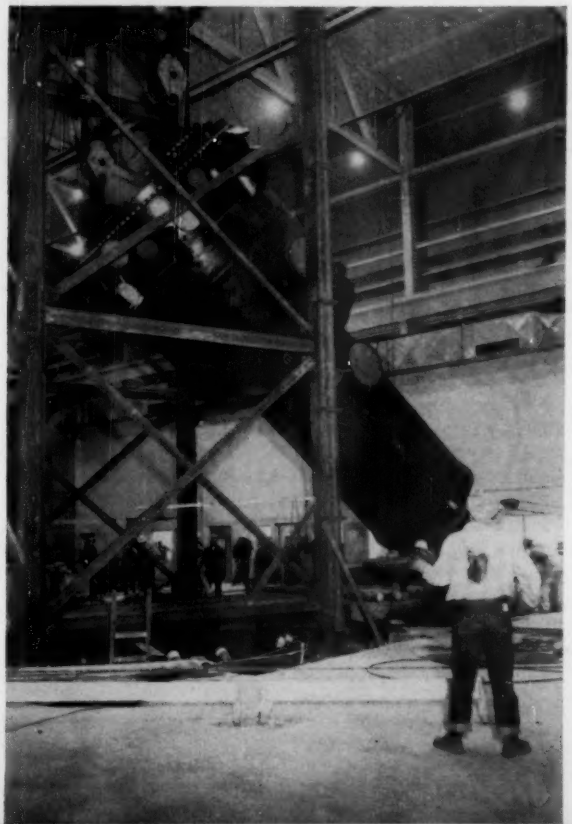
Key Elements in Development Program

The three key elements in a program for developing the engineering organization—Selection, Appraising and Inventorying, Training—are each possible of achievement, each capable of producing predictable results, but they must be present in combination if they are to make more than a limited contribution to the desired objective. First, we must understand each individual's full potential, as well as his limitations. The organization needs for personnel both in numbers and talents must be determined. From this point on, the construction of a sound plan for developing the engineering organization becomes a task of (1) establishing a balance among the three elements in the knowledge of the needs of the engineers who are to be developed, and (2) utilizing appropriate techniques for developing each element.

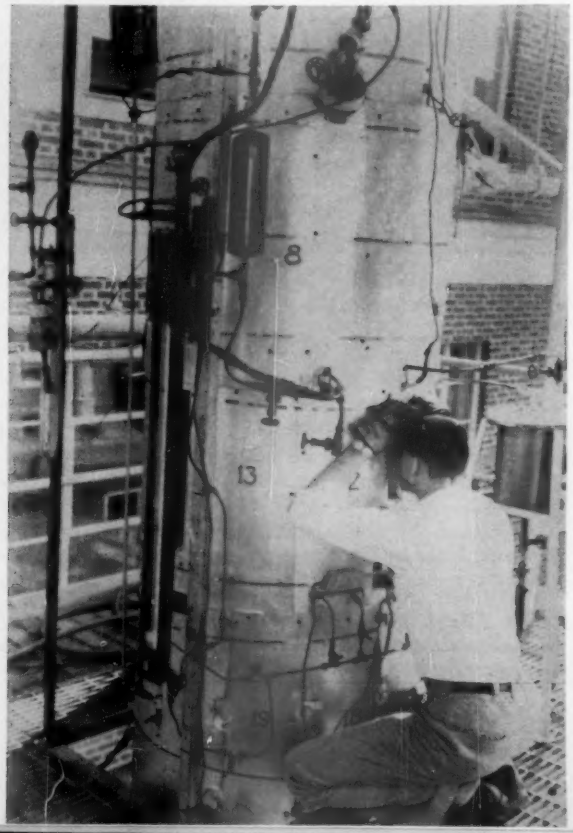
The approach in developing any engineering organization would be the same, to the extent that all three elements will be present in any sound plan. Obviously, the emphasis given each element, as well as the techniques employed for carrying out each, will vary according to the needs of the particular company.

When I refer to the engineering organization, I am thinking of a technical team made up of individuals ranging from management engineers and administrators, highly technical engineers, technicians, clerical assistants and craftsmen—the group that is concerned with technical engineering problems. Too, it is recognized that the supervision of engineering personnel is a different function from

In government work as well as industry, the engineering department has assumed greater and greater importance. Below: The reactor vessel, "heart" of the engineering test reactor, is lowered into position at the Atomic Energy Commission's plant at Idaho Falls, Idaho.



Young engineers should not be upgraded before they are ready. Interesting work, such as research on this distillation and absorption column at the University of Delaware, is the important element in keeping the fledgling engineer sold on his job while he learns.



"A Powerful incentive for an Engineer is the Opportunity to Work at . . . the Peak of His Capabilities"

that of doing engineering work, and the specific assigned responsibilities of the engineering personnel must be considered when building the development program.

Selection

Most discussions of selection of engineers begin with a study of recruiting and hiring and eventually reach the subject of promotion. Such an approach may be logical from the point of view of a new employee and from the point of view of a new business. A going concern, however, should put emphasis on promoting employees to fill a vacancy before giving consideration to hiring new men.

Let's examine first the promotion of present employees.

Advantages include: More is known about an employee than about an applicant; fewer adjustments to and within the group; provides incentive for others; encourages self-development, and reduces break-in period.

How do we approach this task with some assurance of producing desired and predictable results? We need information.

A. Personnel records must be maintained to show the following information about each employee in the engineering organization:

(1) Education and training before and since joining your organization must be known; a sign of willingness to sacrifice for self-development.

(2) Work experience before and since employment with company.

(3) Personal information: age, health, etc.

(4) Community and civic participation and membership in professional organizations. (Here we seek signs of leadership ability and professional attitude.)

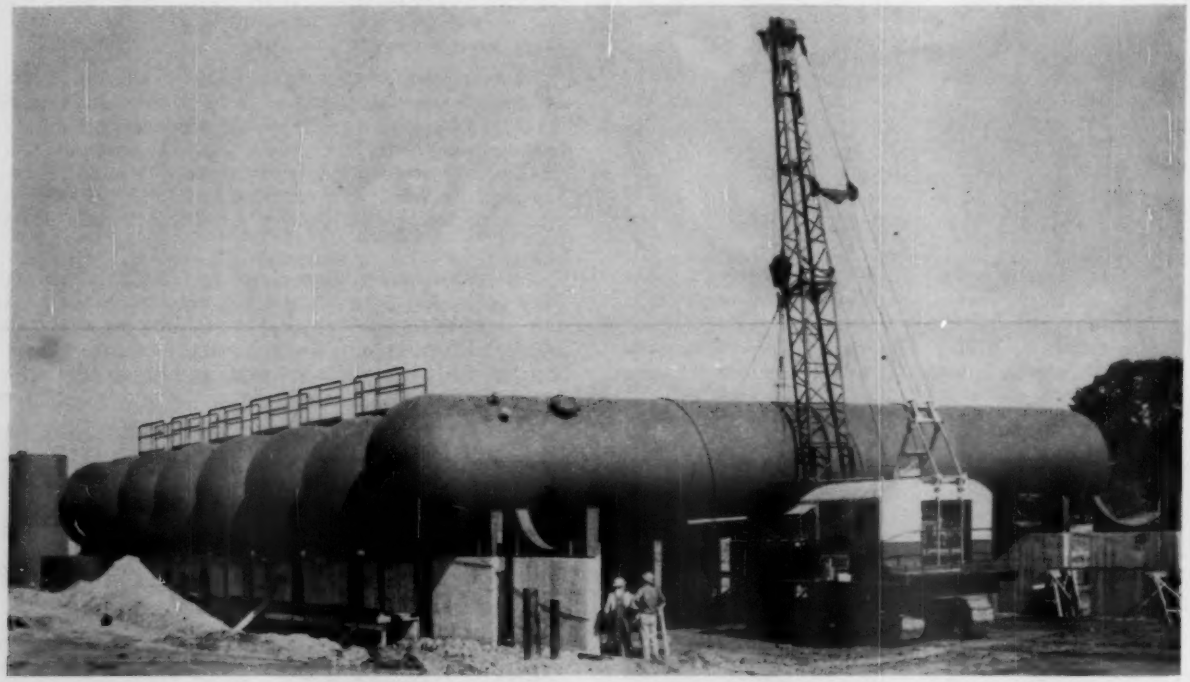
The above information must, of course, be on a current basis to be helpful.

B. Periodic appraisal or performance rating:

Successful appraisal of individuals is in many ways the key to the success of any development activity. Sound appraisals can greatly improve the candidate selection process; it can uncover individual weaknesses for which remedies can be selected; and it can also aid in evaluating the effectiveness of specific training devices. Some people advocate semi-annual appraisals. I happen to think an annual review of performance is sufficient. It should certainly cover specific factors of job performance such as knowledge, accomplishment, quality and initiative. Such factors as flexibility, creativeness and acuteness should also be considered for engineers. Today we must appraise his human skill in working with others. Engineers must have ability to be an effective group member and also if a supervisor, the ability to build cooperative effort within the group he leads.

I think it may be emphasized that the specific appraisal

(Continued on page 46)



A good engineering department is a "must" in today's fast-moving industrial pattern. It took only one hour and seven minutes to place each of these 70-foot-long iso-pentane tanks in operation at the McMurrey Refining Co., Tyler, Texas.

FROM WASHINGTON

BY
MILTON F. LUNCH,
N.S.P.E.'s Legislative Counsel

HOUSE REJECTS BLANK CHECK APPROACH TO PROFESSIONAL PAY PROBLEM

PRESENT indications are that Congress will pass over this year the basic policy question of what to do about the recruitment, retention and compensation of engineers and scientists in the Federal Services. This does not mean that Congress will not have done anything on the subject by the time of anticipated *sine die* adjournment, on or about the middle of August. On the contrary, dependent upon the outcome of differences between Senate and House bills, there will definitely be a general pay increase for Federal employees, and possibly special action affecting engineers and scientists with regard to higher starting rates, payment for travel to first duty stations and for employment interviews, and increased authorizations for higher grade positions.

But these developments are admittedly stop-gaps, expedients and temporary solutions to the root question of a permanent method of securing and holding professional engineering and scientific talent in the face of competitive demands from industry and other private employers—stimulated in large part by massive Government expenditures for necessary engineering and scientific work in national defense. The problem is illustrated very clearly in connection with the legislation to establish a national space agency. Here, everyone could understand that a space exploration program would succeed or fail absolutely on the agency's ability to recruit and retain specialized technical talent. The Administration proposed, therefore, a new and radical idea in Federal personnel policies—give the agency a blank check to fix rates of pay "reasonably comparable with prevailing rates paid by non-Federal employers for similar work." While justified on the basis of the need for engineers and scientists, the authority would have applied to all employees.

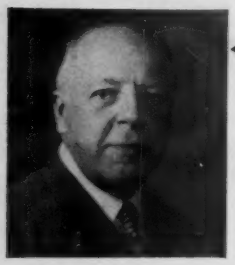
Some of the leading technical figures in the Government have argued for years that the "prevailing rate" concept was the best answer to the engineering-scientific manpower problem. Its use by the proposed space agency would have been the experiment to test the theory. Although the Civil Service Commission was not consulted in the drafting of the proposal, Chairman Harris Ellsworth endorsed it as an "experiment" based on certain "understandings" that the agency would classify its jobs in a manner consistent with job classifications under the Classification Act, and would use existing agencies to collect field pay data. Additionally, Director of the Budget Maurice H. Stans "assured" the legislators that the regulations would be designed to avoid serious disadvantage to other agencies not given comparable blank check authority, and that it was not "expected" that any employee of the agency would be paid more than the director, set by the bill at $22,500.

The case for the blank check literally fell apart, however, at the hearings, and the House Committee rejected the suggestion. "While recognizing that the agency would need authority to pay higher compensation . . . in order to recruit and hold qualified scientists and engineers, your committee concluded that unlimited authority was unnecessary and would lead to harmful consequences," the House was advised. "With unlimited authority to fix rates of pay, the new agency could make raids on the scientific and engineering personnel of other agencies engaged in programs of equally high priority. In turn, it could still be outbid by private companies holding cost-plus contracts with the Federal Government. This competition with other agencies and with private contractors might cause a pay spiral that would greatly increase the cost of all programs requiring scientific and engineering services, and, in addition to widespread harmful effects, would defeat the purpose of the pay provision."

Maurice H. Stans
Director, Bureau of the Budget

During the appearance of Dr. Herbert York, chief scientist, Advanced Research Projects Agency, before the Senate Space Committee, Senator Clinton P. Anderson of New Mexico, cited the hypothetical case of the space agency paying an expert $25,000 and the disruption it

would cause in other agencies without the broad salary authority. Later, Senator Anderson, in a colloquy with Under Secretary of the Air Force Malcolm A. MacIntyre related some of the "fabulous" salaries which Government scientists had obtained when they transferred to private industry and commented, "I just wonder if one group of people got these fancy salaries and some other group that stayed with the Government and tried to perfect the X-15 get a third or less of the salary of these other people, would there be any difficulty?" Secretary MacIntyre agreed there would be a "real problem." Secretary of the Army Brucker acknowledged to Senator Saltonstall that the special unlimited pay authority would create a "disproportionate relationship" with salaries for Defense Department employees, but added, "I think you could correct that, though." He didn't say how it could be corrected. A logical assumption is that the "correction" would have to grant the same unlimited authority to all agencies.



Wilber M. Brucker
Secretary of the
Army

Malcolm A. MacIntyre
Secretary of the
Air Force

Garrison Norton, assistant secretary of the Navy for Air, put his finger on another crucial problem by pointing out that the legislation establishes a top limit of $22,500 for the director, "who himself should be one of the leading scientists of the country," and that his salary "is probably going to be half or maybe only a third of the rates that he is going to have to pay to get the kind of people he needs . . ." However, Norton disputed Senator Saltonstall's statement that the blank check provision "isn't practical," even though "it is going to have a bad effect on other Government agencies and laboratories." He touched on a delicate example whereby the Government can get the benefit of special talent personnel through the device of establishing a private research organization which then is granted a research contract and is able with Federal funds to pay realistic prevailing rates without regard to Government salary levels. Norton cited the example of the Navy scientist who is the inventor of the Sidewinder missile—"a very brilliant scientist"—who is being paid the maximum of the Federal pay scale, and the possibility that the space agency might offer him $40,000, which the Navy could not compete with and thus lose his services.

As a consequence of these several considerations, the House Committee, after consultation with the House Civil Service Committee, threw out the experimental approach and adopted the traditional civil service personnel authorization, but authorizing ten positions up to a limit of $21,000 and 250 additional positions up to $19,000. The super-grade device is being employed on an expanding basis as the engineering-scientific manpower problem becomes acute in certain agencies. The Department of Defense now has 120 such positions, with a request pending to raise the number to 435, and the National Advisory Committee for Aeronautics has thirty such positions. In adopting the super-grade approach, the Committee restated one of the reasons given against the blank check approach. "In the absence of such a provision, the agency would be unable to command the necessary services, unless it adopted the costly practice of other Federal agencies in similar situations, by putting such personnel on the payroll of specially created private corporations at salaries in excess of $30,000 a year."

Meanwhile, the Administration is seeking repeal of the ceiling of 1226 positions in the GS-16, 17 and 18 grades, which, under the new pay bill are compensated at $14,190-15,150, $15,375-16,335, and $17,500, respectively. In his budget message the President said: "Statutory limitations on the number of positions in the highest pay grades should be removed altogether, to permit more reasonable salaries for scientists and executives carrying heavy burdens of leadership and decision." A further likely change in the personnel situation involves raising the entrance grade for engineers and scientists to GS-7 ($4,980-5,880). This was provided by the House in the Space Bill, but that special authority will be unnecessary if the Senate pay increase bill provision to the same effect Government-wide is adopted, as now expected.

Both Rocco Siciliano, the President's personnel adviser, and CSC Chairman Ellsworth have recently stated dissatisfaction with the present methods of fixing Government salaries—inflexible, lack of realism to non-governmental pay scales, and the impossibility of timely adjustments. The problem is getting the "serious study" of the Eisenhower Administration, according to Siciliano.

If the Administration and Congress want to get down to bedrock next year and undertake a real overhaul of the pay structure and system, they could get no better advice, insofar as engineers and scientists are concerned, than to follow the eminently sensible and succinct comment of the veteran legislator, Edith Nourse Rogers of Massachusetts, who said during the debate on the Space Bill: "I think we ought to overhaul the ratings of the entire civil service so far as professional people are concerned in order to hold them."

In This Talk As Given Last Month At the Annual Meeting in St. Louis, NSPE's New President, Clark A. Dunn, Accepts His Position of Responsibility . . .

The NSPE—A Saga of Progress

President Dunn

THE National Society of Professional Engineers has been blessed with devoted, able, and effective leadership. To identify the contributions of each of our presidents would be to recount what many of you know so well. Nevertheless, I have selected from the Society's kaleidoscope of progress, activities of our last four presidents to provide the background for my remarks.

You and I are deeply indebted to Past President Shoch, the master craftsman of organizational planning; to Past President Neff for his driving determination to bring order out of the tower of Babel of engineering organizations; to Past President Rhinehart, the clairvoyant prophet of problems of Federal legislation affecting engineering education; and to President Dyer for the calm, determined and continuing effort to blend the tremendous drive of the membership of NSPE—as expressed in committee proposals, leadership of state and chapter officers, Engineers' Week programs, and actions of the Board—into a coordinated total effort.

In this phenomenal saga of progress under the leadership of our presidents, each of us detects that essential thread of consistent action, timely reports, astute news releases, and magazine articles, possible only because of an efficient and effective headquarter staff, skillfully and wisely led by the ablest individual in a position of this type—Paul H. Robbins.

The National Society has, in its early years, plodded earnestly toward its goal, has at times turned aside to mend a minor weakness, but it has never wavered from its goal—to identify engineering needs of both society and the individual member of the profession and to seek ways those needs can best be fulfilled. It has year by year attracted new recruits, which has accelerated the Society's pace of progress.

It might be said tonight as I receive this gavel, that we here stand together on the crest of this hill climaxing the formative years of the National Society of Professional Engineers. NSPE has achieved maturity, and as we catch our breath from the long ascent, we are privileged to turn and look at the scene ahead.

Within the limits of my ability I would describe that magnificent and challenging landscape. Far in the distance is the towering peak that we call the objectives of our Society—Mount Objective, if you please!

Let me reiterate those objectives which you know so well. "The objectives of the National Society shall be the advancement of the public welfare and the promotion of the professional, social and economic interests of the Professional Engineer."

Some have better eyesight than others and see Mt. Objective clearly and distinctly; possibly some are so pre-occupied with a little trout stream of personal advantage to the left that they scarely look at the mountain; still others give it only a hasty glance and look despairingly at the cactus field of the doubters carping criticism of minor phases of our Society's activity. Progress of NSPE, then, as of any organization, requires constant emphasis of its objectives by you who are here tonight and whose eyesight is unimpaired.

Would you now look closely at the landscape toward, but just to the right of Mt. Objective? I grant you that the path of society responsibilities, public service, help to young engineers and high ethical conduct may look less attractive than that inviting trout brook of exclusive self-interest; but a more careful study of the landscape of human relations indicates a beautifully forested area of public recognition and esteem by fellow engineers. Scarely visible at first, but clearly discernible to most of our membership, is a fisherman with a string of this world's goods, who is right along the path toward Mt. Objective.

As members of this Society, let us emblazon the incentives of the professional viewpoint across the engineering horizon. Without implying minor importance to economic problems of the engineer in the mile of his daily round of tasks and duties, it is in the second mile—described by Wickenden as the mile of voluntary effort, where men strive for excellence, give unrequired service to the common good, and seek to invest their work with a wide and enduring significance—that one finds the fundamental incentive of a profession.

As we stand here on the crest of this hill representing a milestone of achievement, let us also be aware that all too few engineers are here. Not only must each of us recount this pic-

(Continued on page 25)

How to Make Technical Writing Easy

By

PROFESSOR W. P. ALBRECHT, *Chairman of the Department of English Language and Literature, University of Kansas*

and

ASSOCIATE PROFESSOR HAROLD OREL, *of the same Department at the University*

NAPOLEON said it—to Gaspard Gourgaud—at St. Helena: "Engineers are more clever than artillerymen." A century and a half later, everyone understands why he said it. The engineers, working in conjunction with the scientists, can win wars, or decide their outcome, sooner than the soldiers.

But engineers are needed for assignments other than in the field of ordnance. The United States, building its prosperity on technological foundations, needs goods of all descriptions; what does not already exist must be created in order to satisfy the real or imagined needs of the consumer public. A man may have earned his engineering degree by being "clever," to use Napoleon's term. But many years after Commencement Day, he demonstrates his cleverness in a multitude of ways.

Unfortunately, the average engineer does not write very well. He does not like to write, and, indeed, he regards writing as an imposition on time that can be spent to better advantage in other ways. The reports which he should be passing on to his colleagues, to his government, to his corporation president, to the director of his research laboratory, are begun with trepidation; wrung out with sweat; concluded with relief. He has staked out an impressive claim on America's future, but he hates even to think of the technical reports through which clear, effective communication is best established.

His antipathy is genuine, and often the result of hard-earned experience. If, by some mischance, he likes to write a report now and then, he will soon lose his taste for the task when his group assigns him the onerous responsibility of writing *all* the reports. Unless he takes care, he will drift away from active work in engineering. Writing is a full-time job.

"Technical writing" is a postwar phenomenon, in large measure. It did not exist before the mid-1940's, at least by name; within such large companies as Westinghouse, Monsanto, Du Pont, it did exist in fact. Even today, not all the people who do this kind of work agree that "technical writing" is the proper name for it. Many stoutly maintain that they write in the English language about subjects that may (or may not) be technical. Hence, there exists a good deal of confusion as to just who is, and who isn't, a member of the craft. The two leading associations, the Society of Technical Writers, with headquarters in Newton Centre, Massachusetts, and the Association of Technical Writers, with headquarters in New York City, do not speak for their profession with anything like the authority of a Modern Language Association or of the American Chemical Society. Nobody knows how many technical writers are employed in the Greater Washington, D. C., area: the guesses depend on the definition of the term, and the margin of error is amazing.

Still, technical writing is not only a big business, but much bigger than many technical writers realize. In the plants of various Air Force contractors—let us cite some statistics that apply only to one of the services—an estimated 15,000 people are preparing technical manuals; the reproducible or master copy produced for technical orders in one year is equivalent to the weekly publication of 500 *different* 60-page books; approximately $7,000,000 is spent annually on the printing of these technical orders, making a stack of publications seventy miles high; and the contractual preparation of technical publications costs an additional $250,000,000 a year.

SUCH statistics are hard to come by, and have never been properly collated. They represent the costs of engineering research, writing, illustrating, and composition for the publications. They indicate that people who can write are badly needed. They suggest that the shortage of good technical writers arises, at least partially, from the unwillingness of the engineer to write reports.

It is true that a booming economy and a rising population have created demands for more professional people, with more advanced skills, than the annual crop of graduating students can possibly satisfy. Today the number of vacancies in industry, which are not being filled by engineers because there simply are no more engineers to hire, is at least 40,000; some estimates run as high as 70,000. The Manufacturing Chemists Association believes that in 1965 more than 450,000 engineering vacancies will exist (quite apart from the engineering positions that will be filled). At General Electric the proportion of engineers to production workers has risen from 1 in 255 (1900), to 1 in 62 (1950), to 1 in 11 (1956). Our universities are graduating today only one-third the necessary number of nuclear scientists. So far as the production of engineers and scientists is concerned, and measured on a quantitative basis only, we are losing the race with Russia.

For these reasons the most efficient use of available

talent has become imperative. The engineer must write his report, willy-nilly, despite his disinclination. He must produce the raw data, the information, the calculations, the charts, the ideas, the rough draft. Elaborate publication setups, complete with editors, artists, make-up men, printers, and couriers, depend on him. And even if to these publishing units and sub-operations are added people with liberal arts degrees, who masquerade as "administrative assistants," "associate chemists," and "supporting staff," helping out where they can, in whatever ways they can, the engineer is ultimately responsible for the version that is distributed under his name.

In brief, the question is not whether the engineer should learn how to write in addition to the things he needs to know about his professional field; but at what stage of his career this learning process should take place. People in industry blame the universities for not teaching the engineers how to write. The engineers often say they didn't have the time to learn while they were taking the courses of their largely predetermined curriculum; unless a composition course was required, they would not elect it. The administrators of engineering colleges say that they don't

Technical writing is now big business, with millions of dollars being spent every year by industry and government for reports and other material.

have the personnel to teach courses in technical writing. And the member of the English Department who finally teaches it is—in all likelihood—not technically trained; unsympathetic with the subject matter; and ignorant of what it is like to work with engineers in the field.

But blame is irrelevant, as the problem remains. The problem is simply this: what should a course in technical writing do for the engineering student? An engineer with his degree may think that writing is not his business, that someone else will write his report, and that technical writing is not really important as a discipline. He labors under the weight of some increasingly old-fashioned ideas. Writing *is* his business. Nobody else will do it for him.

We offer some ideas about the technical writing course on the basis of considerable experience in industry, in Government, in research laboratories, and in the teaching of engineering undergraduates. We have used textbooks which deal with the subject-matter, insofar as it can be defined, and we have seen statements in these textbooks that are manifestly false, and a great many more statements that are woefully misleading about the conditions that an engineer will confront after his graduation. These ideas are offered in the hope that controversy will be stimulated, and that the technical writing course can become even more useful to the graduating American engineer.

WE can begin with a definition. Technical writing is the kind of writing that communicates useful information. It could just as well be called informative, objective, or practical writing. Poetry or fiction or any other kind of "literary" composition has a different aim—the communication, to an important degree, of sensation and emotion —technical writing communicates facts and opinion. Whether those facts are in the field of electrical engineering, or of geology, or of economics or medicine, biology or linguistics, the principles of technical writing remain the same. Above all things, clarity is necessary, and clarity implies an orderly arrangement of connected parts, an accurate choice of words, and due regard for standard usage. Technical writing is simply good expository writing with practical intent.

The problems of a technical writing course, then, are largely the same as those of freshman composition. A great deal of class time is needed for the sort of hard, gritty work that should go on in English One (and often doesn't): diction, punctuation, sentence structure, and paragraph development, taught and taught over again. Abundant illustrations, both good and bad, should be drawn from the students' own work. Time spent on correcting sentences in a handbook is generally wasted.

Most technical writing books teach basic principles of exposition, and become "technical" when they apply these principles in certain "forms" which the student is likely to encounter in industry. Examples are, or should be, provided so that the student may proceed inductively through principles to the applied forms. These principles are really thought processes, especially those necessary to practical activity. Four basic principles (we might even say *the* four) are definition, analysis, interpretation, and evaluation. In a course in technical writing a student should do a good deal of defining, analyzing, interpreting, and evaluating: he should do it in clear, orderly, standard prose. All reading and writing should be directed toward this goal. Almost any kind of careful reading or any kind of directed writing helps the student to write better, but we shall specify the kinds of writing and reading that seem to us most useful in a technical writing course.

Specific writing assignments—which should always be prepared for by illustrative readings—may include a set of sentence definitions; an extended definition of some scientific or technical term (like "work") written for a high-school class encountering the word for the first time; the analytical description of a pencil or pair of scissors (a good topic for a class paper); the analysis of some fairly easy process into its steps or stages; a classification of such familiar objects as golf clubs or dance records; the interpretation of a simple set of statistics; and the listing of standards for evaluating some device, course, instructor, or other subject. (For this last kind of paper *Consumer's Reports* and similar publications offer excellent examples.) Although the "technical article" in any real sense of the term is beyond the ability of most students in an undergraduate writing course, a report with recommendations is not. It is, furthermore, a good means of requiring the student to integrate his abilities to define, analyze, interpret, and evaluate for a specific audience. Almost any student will have had enough experience to write a report evaluating two or three simple devices, processes, plans, or locations according to a clear-cut set of standards. A few letters, including a letter of transmittal for the report, may also be assigned.

The readings in the course should be chosen, generally,

to illustrate basic principles to be applied in the papers. Clear-cut, unequivocal illustrations are hard to find, and the instructor will sometimes find it best to write some of his own. They need not be "technical" in any narrow sense. We have taught analysis with Dr. Tannenbaum's description of the letters of the alphabet in his *Handwriting of the Renaissance,* and interpretation with both lyric poems and the documentary evidence for some historical event. Carl Becker's *History* is excellent as an example of extended definition, and of analysis as well. Technical articles, engineering reports, and business letters may also be read; in fact, well-written, understandable examples of these types should be assigned to show the practical importance of basic principles, and as examples of format (headings, spacing, etc.); but they are not indispensable, and the student should understand that format, except to the degree that it reflects organization, is of secondary importance.

THE readings should not be used, to any great extent, to supply material for the student's papers. A professional situation assumes mastery of materials. A practicing engineer, geologist, or economist who writes a report or article presumably knows more about his immediate subject than anyone else. His problem of composition does not include investigation, which he has already accomplished; and to send a student to the library to read about steam turbines is not going to help him very much with either composition or investigation. He may learn something about reference books, footnoting, etc., but he will not learn much about turbines. As far as control of material is concerned, his writing will be more "professional" if he writes his process paper on how to teach swimming (provided that he has taught swimming), or his device paper on model airplanes (provided that he has built model airplanes). Or the student may well use the results of investigations performed in other courses, if he has really understood what he was doing; or the results of experiences in industry or the armed forces. If he uses printed materials, he will do better to choose materials that he can master in the time at his disposal, than to select a subject merely because it is "technical" or "scientific." On the other hand, a technical writing course is not the appropriate place to teach literary criticism, the Malthusian theory, or the history of art.

The important thing is to keep the student writing about things he understands; to keep showing him how to organize his materials clearly and effectively, and how to put his ideas into words that are clear and accurate; and, finally, to show him what he has done wrong, and how he can do better. If that sounds like a course in freshman composition, the resemblance is not merely accidental. A second important thing is to keep the student writing after he has completed his course in technical writing. If instructors in other courses where writing is done do not insist that the student write clearly, correctly, and effectively, the course in technical writing will lose much of its value.

Here at the University of Kansas an interesting, and possibly important, experiment is being conducted by the dean of the Engineering School and a member of the English Department. The Fluid Mechanics Laboratory, usually taken by students after they have completed their required technical writing course, becomes the opportunity for students to produce reports on a higher level of professional competence. They are not given time to forget what they learned in a general course; their sense of the importance of good writing is reinforced by a second step in the sequence. They may be bewildered by the heavy emphasis on how they report their findings, as well as on what they are reporting, but, after their initial shock, they are flattered too. Their readers *care* about what they are doing, and saying.

And this will always be the case: industry cares, Government cares, the research laboratory cares, if only because important sums of money are invested in the engineer's work; but even more significantly, because top management decisions must be based on the reports that engineers turn in, and what top management decides today will affect the national destiny. The engineer, no less than any other professional man, should be concerned about his ability to use the English language. Ultimately, in the best of all possible worlds, the technical writing course should be taught by a man who cares about engineering students who understand that they, too, should care.

Is the realization of such a goal possible? We think so.—**End.**

About the Authors . . .

Prof. Albrecht

W. P. Albrecht was born in Wilkinsburg, Pennsylvania. He holds the B.S., M.A., and Ph.D. degrees from the Carnegie Institute of Technology, the University of Pittsburgh, and the University of Chicago, respectively. As a Ford Faculty Fellow, he studied at Oxford for a year. He has worked for Westinghouse Electric as a technical writer and editor, and has taught at Carnegie, Chicago, Pittsburgh, the University of New Mexico, and the University of Kansas, where he is now professor of English and chairman of the Department of English.

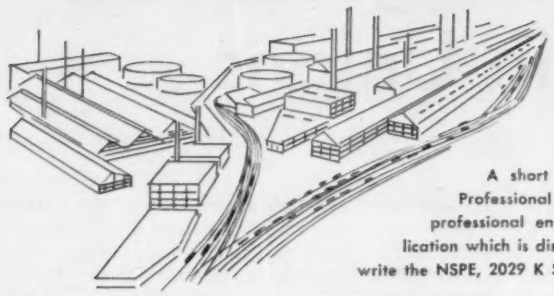
During World War II he served in the Navy and now has the rank of Commander, USNR. Mr. Albrecht has published numerous articles and two monographs, mainly on medieval and Nineteenth-Century British literature. He is co-author of a textbook on technical writing.

Prof. Orel

Harold Orel was born in Boston, Massachusetts. He has his B.A. from the University of New Hampshire and the M.A. and Ph.D. degrees from the University of Michigan. He has taught for the University of Maryland both in this country and in Europe; he has worked closely with engineers and scientists at the Applied Physics Laboratory, Silver Spring, Maryland; as a technical editor he was active in the product information unit of the Flight Propulsion Laboratory Department, Aircraft Gas Turbine Division, General Electric Company.

He has published numerous articles in scholarly publications, expressing special interest in late Victorian and contemporary literature. He is an associate professor in the Department of English at the University of Kansas.

ENGINEERING EMPLOYMENT PRACTICES DIGEST



A short digest of a monthly bulletin published by the National Society of Professional Engineers in the interest of advancing cooperative relations between professional engineers and their employers. To regularly receive the complete publication which is distributed widely to industrial, commercial and educational organizations, write the NSPE, 2029 K St., N.W., Washington 6, D. C.

✓ Minimum salaries for engineering positions ranging from $5,200 to $20,000 are recommended in the Texas SPE publication, *Manual of Professional Practices—Salaries.* The grades are based on the NSPE chart of pre-professional and professional positions. In sequence, the minimum yearly salary recommendations are: $5,200; $5,800; $6,400; $7,600; $9,200; $12,000; $15,000; $20,000. There are six grades suggested for engineering aide positions, with minimums of $2,400; $3,000; $3,600; $4,200; $4,800; $6,000. The full report at fifty cents per copy can be secured from TSPE, 1008 San Jacinto, Austin 1, Texas.

★ ★ ★ ★ ★

✓ **Administration-backed legislation to allow Federal agencies to pay newly-employed engineers and scientists their travel and moving expenses has been approved by a House committee. Travel expenses for applicants to visit plants as an aid in recruitment is also covered. The committee report said the legislation is needed because "the shortage of engineers and scientists, in particular, is common knowledge and has been a matter of growing concern. The Government must compete with the inducements of private industry or its vast scientific and technical programs cannot be accomplished." The committee said the inability to recruit enough engineers and scientists for defense-connected projects is one of the "most serious" problems facing the Federal Government today.**

★ ★ ★ ★ ★

✓ A review of recently-announced industrial programs in the field of engineer-management communication shows emphasis on face-to-face meetings. Among the company programs are those which include regular meetings for technical sessions and discussion of policies, small group discussion of specific topics of interests, use of press notices to hometown newspapers about contributions of engineers and scientists in an Air Force missile program, and cash awards for publication of papers in professional or business magazines.

★ ★ ★ ★ ★

✓ **A series of two-day meetings on improved utilization sponsored by Rensselaer Polytechnic Institute will start in July. There will be one group in each succeeding month through November. Subjects will include best work-area assignment, creativeness, management potential, individual growth and development, technician selection-placement, and technician upgrading training. For details and enrollment form contact Mrs. Helen B. Peet, Coordinator, Personnel Appraisal Institutes, Personnel Testing Laboratory, RPI, Troy, New York.**

★ ★ ★ ★ ★

✓ The popular image of the scientist as a "square" or an "anti-social hermit" has been shattered by a social science survey of Du Pont Company research men, according to Samuel Lenher, a Du Pont vice president. The survey covered 1,200 technically trained Du Pont employees engaged in research. Based on the survey, the typical American scientist is a family man who takes a deep interest in religious, social and civic affairs—seventy-five per cent listed church as important in their activities and thirty-seven per cent participated in sixty-four different civic affairs. Lenher pointed out that forty-three of the one-hundred and eighteen top management posts in Du-Pont are held by men who began as research scientists, and all twenty-four of the directors and assistant directors of research in the company's various departments are scientists.

★ ★ ★ ★ ★

✓ **Contrasted with the above survey findings are those released by the Horace Mann-Lincoln Institute of School Experimentation of Teachers College, Columbia University, which holds that scientists are introverted, show asocial tendencies, have strong leadership drives, but aren't conscious of their motivating forces. However, engineers emerge in a little better light than scientists. The engineers are found to have personality traits that lead to success in most other fields—tact, interest, initiative, leadership, dependability and energy.**

★ ★ ★ ★ ★

✓ The United States Court of Claims has rejected an attempt by the American Federation of Technical Engineers, AFL-CIO, to obtain higher overtime pay for Federal engineers, scientists and others whose pay has been boosted to the highest step of their grade. The test case brought by AFTE was based on the theory that the law requires overtime pay based on the minimum rate of Grade 9, and that for those boosted to the highest step of their grade the minimum was, in fact, the top step of Grade 9. The Court held that the action of Congress in authorizing higher steps in the grade for scarce employees was to place the Government in a more favorable competitive position in the recruitment of new employees, and did not contemplate changing the general law governing the computation of overtime pay on the minimum rate of Grade 9 applicable to all employees.

★ ★ ★ ★ ★

✓ **A bid of the Engineers & Architects Association to represent production follow-up employees in the airframe, jet engine, and missile sections of Rheem Manufacturing Co., Aircraft Div., Downey, Calif., failed in an NLRB-conducted election. The engineer-technician union polled three votes and the steelworkers, AFL-CIO, one vote. Eight employees voted for neither union.**

NSPE Compiles Figures On Engineers in Unions

APPROXIMATELY 40,000 professional engineers and scientists are represented by unions in the United States, of which not more than 30,000 are dues-paying members, according to a tabulation released by the NSPE Engineer-in-Industry Subcommittee during the Society's annual meeting in St. Louis, Missouri.

Wayne E. Ault, chairman of the Subcommittee, said, in releasing the first tabulation of its kind, that the detailed statistical material is intended to help professional engineers and scientists evaluate the facts in the controversial "unionization" question. Pointing out that the Society is firmly opposed to unionization of professional engineers, Mr. Ault said this fact has not influenced the compilation of engineer-technician unions. "While actively seeking the advancement of the engineering profession within professional principles and outside of unionization, the Society has tried to recognize the fact that the first point in the solution of an engineering problem is to obtain all the pertinent facts," the head of the Society group said.

Twenty-eight collective bargaining units are included in the first tabulation of unions representing engineers/scientists and/or technicians. The units are limited to those in which the professional or technician element is predominant, and does not include overall unions which may have a sprinkling or small percentage of engineers or technicians. The number of professional employees in these heterogeneous units are believed to be extremely small. The tabulation will be revised and up-dated periodically as additional information is received.

In presenting the tabulation to the Society's membership during the annual meeting, Mr. Ault pointed out that the claims regarding union representation or membership have varied widely, due mainly to lack of adequate definition and exaggerated union claims. The tabulation shows the name of the union, the organization of which it represents employees, the total number represented, the number of dues-paying members, the number considered professional employees within the Taft-Hartley definition, and the number of nonprofessional employees. The statistics are documented by reference to official or other sources where possible, Mr. Ault stated. But he noted that in many instances such documented information is not available from any source, and estimates are used in such cases.

When professional and nonprofessional employees are lumped together, the unions represent approximately 63,000 employees, of which approximately 37,000 are dues-paying members. The 40,000 professional employees represented by the listed unions constitute something less than ten per cent of the total engineering population of the United States, the exact percentage depending upon an estimate of the engineering population.

The listing of unions representing engineering and technical employees is available in printed form from the National Society of Professional Engineers, 2029 K Street, N. W., Washington 6, D. C. at $1 per copy.

FOREWORD

The compilation of unions representing engineering and technical employees in the United States has been compiled by the National Society of Professional Engineers to meet a long-felt need in evaluating the important and controversial "unionization problem" of the engineering profession.

Over the years, one of the most difficult aspects of the unionization question has been the lack of complete or authentic data on the numbers and kinds of employees represented by, or members of, collective bargaining organizations. The published claims of the unions, and even of independent organizations, have varied widely and inconsistently.

Most of the reasons for this difficulty are well-known: (1) The complete absence, or inadequacy, of definitions for "engineer," "technician," "professional," "sub-professional," etc.; (2) The reluctance of the unions in many instances to publish representation or membership figures for fear that an honest report would disclose the weakness of their position for purposes of bargaining or public relations; (3) The exaggerations and distortions of representation or membership of the unions for propaganda value; (4) Incomplete information in any central source to reflect periodic changes as unions emerge and go out of business.

A further general difficulty lies in where to draw the line on the inclusion of one union and not another in such a listing. This problem relates back to the lack of definition and distinction between engineers, technicians and production workers.

A dramatic, and to some extent typical, example of the difficulty in drawing a proper line arose during the campaign involving Minneapolis-Honeywell Regulator Company in 1957. In that case the 3-way question was whether the engineers and technicians desired to be represented for collective bargaining by a local of the UAW, an all-engineer/scientist unit, or no union. The latter choice prevailed for both professional employees and technicians. During the campaign, however, the UAW group had argued that it would not be novel for the engineers to be represented by it because the UAW already represented 10,000 engineers in the auto and aviation industries. Specific research of the collective bargaining contracts disclosed, however, that the union represented actually less than 100 employees with engineering/scientific degrees, and these were engaged in sub-professional duties at the time. Obviously, to the union the great bulk of the 10,000 involved were "engineers," but were in fact technicians or skilled production workers.

In the face of these obstacles and limitations, the Engineer-in-Industry Committee, NSPE's expert body on industrial employment of professional engineers, has undertaken the attached compilation, subject to the following notes:

1. The listing of unions is as complete as the known facts permit, but it is limited to those unions which represent engineers/scientists or technicians only, or if part of a mixed unit,

(Continued on page 25)

Compilation of Unions Representing Engineering and Technical Employees

Compiled by National Society of Professional Engineers, 2029 K Street, N. W., Washington 6, D. C.

Name of Union	Employer	Total Number Represented	Total Number Members	Unit Representation Professional Employees	Unit Representation Nonprofessional Employees
Aircraft Chapter*	Lockheed Aircraft Corp.	3,800	1,600	3,400	400
American Federation of Technical Engineers, AFL-CIO	900 F Street, N. W. Washington, D. C.	12,000[1]	12,000	1,000	11,000
Association of Engineering Employees of Oregon	State Highway Dept. Oregon	850	600	680	170
Association of Engineers and Engineering Assistants	Philadelphia Works General Electric Co. Drexel Hill, Penna.	140	75	70	70
Association of Industrial Scientists	Shell Development Co. Emeryville, Calif.	390	330	390	—
Association of Professional Engineering Personnel, ESA**	Camden Plant, RCA Camden, N. J.	1,700	1,600	1,700	—
Association of Professional Engineers, Chemists & Scientists	The Texas Co. Port Arthur, Tex.	120	30	120	—
Council of Western Electric Professional Employees-National, ESA	Western Electric Co. New York, N. Y.	7,000[2]	n.a.***	5,500[2]	1,500[2]
Engineers' Association, ESG****	Sperry Gyroscope Corp. Great Neck, N. Y.	3,400	1,500[4]	2,670	730
Engineers' Association of Arma, International Union of Electrical, Radio and Machine Workers, AFL-CIO	American Bosch Arma Brooklyn, N. Y.	1,260	1,260 (Union Shop)	860	400
Engineers and Architects Association, ESG Civic Center Chapter	Los Angeles Dept. of Water and Power and City and County of Los Angeles	1,600	950	1,300	300
Engineers and Architects Association, ESG Metropolitan Chapter	City and County of Los Angeles	1,100	500	700	400
Engineers and Architects Association, ESG Pomona Valley Chapter	Convair Division General Dynamics	1,300	550	910	390

* Formerly affiliated with Engineers and Architects Association, the Aircraft Chapter is now an independent union. A new name is currently being considered.

** Engineers and Scientists of America is an independent federation of engineering/scientific unions.

*** n.a.—not available.

**** Engineers and Scientists Guild is a federation of engineering/technician unions provisionally organized in 1958. Final organization is pending subject to ratification by proposed member units.

1 *Directory of National and International Labor Unions in the United States, 1957,* U.S. Department of Labor, Bulletin No. 1222.

2 *Council Compass,* July-August, 1957, p. 9. (The contract between the union and the company has expired and the union has petitioned the NLRB for a new election. Therefore, at this time the union is not recognized for collective bargaining purposes.)

3 Bureau of National Affairs, *White Collar Report,* #10, May 13, 1957, p. A-3.

4 *The Sperry Engineer,* September, 1957, p. 1. (The union claims as members less than one-half of those represented.)

Name of Union	Employer	Total Number Represented	Total Number Members	Unit Representation Professional Employees	Unit Representation Nonprofessional Employees
Engineers and Architects Association, ESG San Diego Chapter	Convair Division General Dynamics	5,400[5]	2,500	3,300	2,100
Engineers and Architects Association, ESG Southeast Chapter	Rheem Mfg. Co. Downey, Calif.	80	80	—	80
Engineers and Scientists of California, ESG	Western Ass'n. of Engineers, Architects and Surveyors—Pacific Gas and Electric Co. —Four Bay Area Soil and Foundation Engineering Firms, Sacramento, Calif.	1,800	1,000	900	900
Federation of Westinghouse Independent Salaried Unions	Westinghouse Electric Corp.	1,700	1,500	1,445	255
Local 400, Professional Technical and Salaried Div., Electrical Workers IUE, AFL-CIO	Federal Telecommunications Laboratory, Nutley, N. J.	720	n.a.	490	230
Lockheed International Engineers Association	Lockheed Aircraft Service International, Inc. New York International Airport, New York	50	n.a.	30	20
Railway Technical Engineers	Great Northern; Chicago Northwest; Chicago, St. Paul, Minn., and Omaha	350[6]	250	230	120
Research and Engineering Professional Employees Ass'n.	Standard Oil Co., (Ind.) Whiting, Ind.	600	560	600	—
Seattle Professional Engineering Employees Association, ESA	Seattle-Boeing Airplane Co., Continental Can Co. Seattle, Wash.	6,200	2,350[7]	5,800	400
Society of Professional Chemists and Engineers	Baytown Refinery Humble Oil and Refining Co. Baytown, Tex.	290	290	290	—
Southern Calif. Professional Engineers Ass'n. ESA	Douglas Aircraft Corp. Southern California Gas Co. Los Angeles, Calif.	6,057	3,743	4,961	1,096
Technical Association of Ward Leonard, ESG	Ward Leonard Electric Co. Mount Vernon, N. Y.	75[8]	55	50	25
Technical Engineers Association	Milwaukee, Wis.	1,000[9]	n.a.	—	1,000
TVA Engineers Ass'n.	Tenn. Valley Authority (17 Locations)	2,000[10]	1,893[11]	1,665	335
Westinghouse Engineers Association-National, ESA	Bloomfield, N. J. Buffalo, N. Y. Jersey City, N. J. Mansfield, Ohio Newark, N. J.	806	800	806	—
Wichita Engineering Association, ESA	Boeing Airplane Co. Wichita, Kans.	1,200	500	1,200	—

[5] *Monthly Labor Review*, January, 1958, p. 38.
[6] *Exponent*, Association of Professional Engineering Personnel, September, 1957, p. 5.
[7] *Northwest Professional Engineer*, Seattle Professional Engineering Employees Association, March, 1958, p. 4.
[8] *Exponent*, Association of Professional Engineering Personnel, September, 1957, p. 5.
[9] *Directory of National and International Labor Unions in the United States, 1955*, U.S. Department of Labor, Bulletin No. 1185.
[10] Bureau of National Affairs, *White Collar Report*, No. 16, June 24, 1957, p. B-1.
[11] *Volts and Jolts*, April, 1958.

UNIONS

(Continued from page 22)

can be identified separately. Consequently, the listing does not reflect union representation or membership for engineers or technicians by production workers' unions, or white collar units, of a general scope. There are some engineers represented by such unions, but no meaningful estimate of the number is possible in view of the total lack of reliable information or evidence about the qualifications of such employees.

2. Where possible, the statistical information is taken from official sources, or union or other publications. Where a source is not indicated, the statistic represents an estimate based on diverse undocumented information.

3. The distinction between professional and nonprofessional employees follows the definition of professional employees as set forth in Section 2 (12) of the Taft-Hartley Act.

It is intended that the compilation will be revised from time to time as new information becomes available. All persons or organizations interested in as complete a listing as possible are invited to submit such data as they may have for this purpose.

It should be recognized by all users of this compilation that the National Society of Professional Engineers has consistently, openly and aggressively opposed the unionization of professional engineers. Regardless of the position of the Society, every attempt has been made to present the information factually. While actively seeking the advancement of the engineering profession within professional principles and outside of unionization, the Society has tried to recognize the fact that the first point in the solution of an engineering problem is to obtain all the pertinent facts; and secondly, to recognize that the "solution" of the unionization problem should and must come from the individual members of the engineering profession. To assist in making a wise choice in evaluating the claims and counter-claims, the arguments and counter-arguments, this factual report is offered.

DUNN

(Continued from page 17)

ture for others who are members of NSPE but for many engineers, some of whom are registered and others who are not.

Accepting membership in the National Society of Professional Engineers is one step the individual engineer can make in developing a professional viewpoint. Our Society's policy of urging its membership to join their technical society is not just a gesture for public appearance but a statement of an essential belief.

Sputnik underlined the critical need for maximum competence of the engineer and the scientist. Meeting the challenge of Russian technology is a part of our responsibility. Our national security and economic progress require that you and I encourage our members to participate actively not only in the solution of technical problems but also in assuring our way of life. As Senator Benton said at the Yale Conference, engineers must either educate the politicians or join their ranks.

Three requirements of a successful organization—clearly defined objectives, an informed membership, and effective incentives—have been alluded to. The fourth factor in the success of an organization is adequate leadership. The progress made by the Society in the past twenty-four years demonstrates the quality of leadership it has had in the past. Around us you see many of the individuals who provided that aggressive leadership—they are still performing a major service for their fellow man. I shall, with the help and guidance of each of you, continue to concentrate careful attention on problems of effective leadership. Progress also along paths outlined in the reports of the Registration, Young Engineers, Intersociety Relations, Public Relations, Publications, Legislative, Scholarship, and other committees will continue.

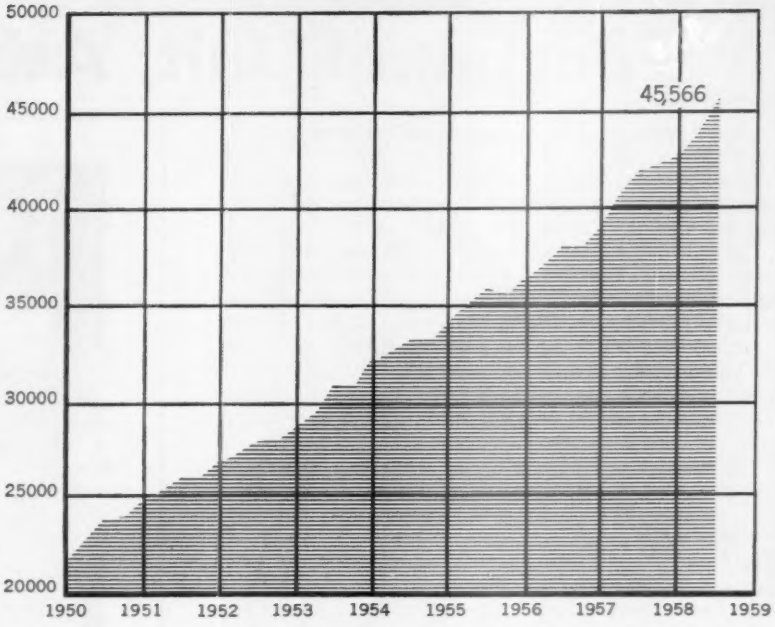
On the open plains of the infancy of the National Society and the grassy foothills of the adolescence of this Society, the problems and needs in each phase of our progress were apparent. Each group had but to pause and look about to keep in touch with others. Ahead, if engineers aspire to a more significant role in our nation's affairs, we must risk the canyon of errors in leadership in long range planning. This Society should not hesitate to enter the dense forests of our nation's problems of security and economic well-being. We must, however, find important landmarks of economic, cultural, and governmental trends to guide us or we will wander aimlessly in the underbrush of trivial details.

It is then my purpose to seek the advice and counsel of the best informed people within and outside NSPE to determine what economic, cultural, educational, and governmental trends may mean to the profession of engineering 5, 10, 25, and even 50 years from now. We have assurance of the assistance of distinguished individuals. Details of this operation will be announced as rapidly as plans are completed.

The National Society of Professional Engineers, having become of age, has reason for elation, but far more reason for sober reflection. The

(Continued on page 32)

NSPE Membership Continues to Climb!



Board Opposes U. S. Educational A
Functional Unit; Asks Better Wate

FORMATION of a Functional Section for Engineers in Government Practice, broad discussion of the AIEE unity proposal, and a protest against large-scale Federal scholarships to undergraduates were highlights of the NSPE annual meeting in St. Louis, Mo., June 11-14.

The new Functional Section was given the green light by the Board of Directors for establishing their group, and the Section immediately went to work and elected the following officers: Leonard N. White, chairman; R. E. Welsh, secretary; Wesley E. Gilbertson, Northeastern Area; Ernest M. Titus, Southeastern Area; Melvin E. Amstutz, Central Area; Gordon E. Bodien, North Central Area; George Hawthorne, Southwestern Area, and E. L. Mathes, Western Area.

The unity plan presented by the American Institute of Electrical Engineers and a membership survey regarding it, were outlined to the Board in a report by the Committee on Improved Professional Activities which was adopted. For *clarification of the AIEE proposal as well as the complete Committee report see page 29.*

In a telegram to Sam Rayburn, Speaker of the House, Garvin H. Dyer, outgoing NSPE president, protested large-scale undergraduate scholarships as authorized in a compromise Federal-aid-to-education bill recently approved by a House Education Committee.

The Society's telegram declared that the nation's rapid rate of technological progress can only be maintained and accelerated by improving the quality and competence of engineering graduates. The Society warned that a massive Federal undergraduate scholarship program would only hinder the progress made by engineering educational institutions in emphasizing the essential element of quality.

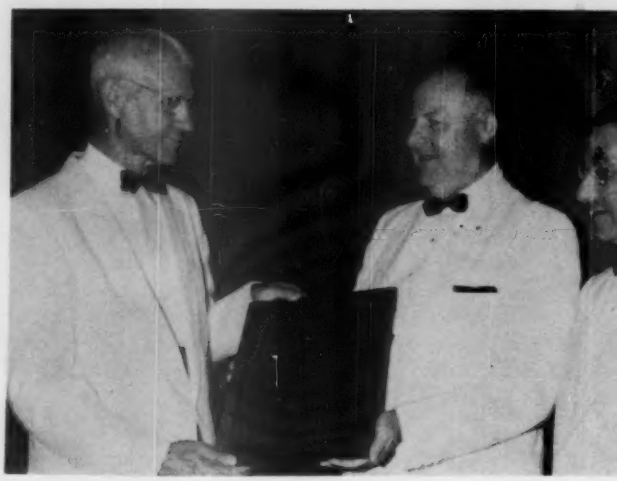
The telegram followed adoption by the Board of a resolution in which Congress was requested to delete the language in pending legislation authorizing Federal undergraduate scholarships.

In another important legislative matter, NSPE called upon Congress to adopt legislation as an aid in improving the proper utilization and development of the nation's water resources. A resolution adopted by the Board stated that the Hoover Commission Task Force on Water Resources Policy, and the Presidential Advisory Committee on Water Resources Policy had pointed the way toward the desirable type of legislation needed to coordinate water resource activities at the Federal, state, and local levels.

The resolution said that NSPE had long favored the creation of a Federal Board of Engineering Review to serve as a policy group to coordinate all engineering functions of the Federal Government, and to settle jurisdictional disputes and eliminate overlapping of operations between the several Federal agencies.

The Board also authorized the solicitation of funds to allow NSPE to enter the case—as a "friend of the court"—pending before the United States Supreme Court involv-

Featured speaker Bertram D. Tallamy, Federal Highway Administrator, left, is shown at luncheon with outgoing NSPE President Garvin H. Dyer, center, and Rex M. Whitton, chief engineer, Missouri State Highway Department.



N.W. Dougherty Rec

The presentation of the NSPE Annual Award for Outstanding
erty, dean emeritus of engineering, University of Tennessee, remin
years, of his many excellent writings. Below are quotations from

"He (the engineer) accomplishes things, solves problems, is the master builder, and the genius of the machine age."
—*Civil Engineering*, 1937.

"Going to college (is) a growing time, it is a time when students put away childish thinking and become mature. . . ."
—*Journal of Engineering Education*, 1951.

al Aid; Forms Gov't /ater Resources Law

Nathan W. Dougherty, left, dean emeritus of engineering, University of Tennessee, recipient of the annual NSPE Award for outstanding service to the profession, receives the award plaque from Immediate Past President Dyer and Past President Alex Van Praag, Jr., chairman of the Awards Committee.

Receives NSPE Award

Outstanding Service to the Engineering Profession to Nathan W. Dough- nnessee, reminded many who have been familiar with his work over the otations from a few as limited space allows:

ems, is e." , 1937.

"Registration can be a routine checking of years in college and degrees of responsibility, or it may be a vital force in building a profession."

—*Engineering Registration*, a book by N.W.D.

en stu- . . ." , 1951.

"The members (of a profession) must remain as individuals, but there is a binding motive, a common method and a common way of life."

—American Engineer, 1956.

ing the consulting engineering firm of Lublin, McGaughy & Associates in connection with alleged violations of the Wage-Hour Law.

In internal activities of the Society, the Board elected Lindley R. Durkee to a fourth term as vice president of the Western Region. This action was required because of circumstances beyond his control, Howard B. Blodgett found that he could not fulfill vice presidential obligations required of him.

At the final banquet session, Nathan W. Dougherty, dean emeritus of engineering at the University of Tennessee, became the eighth recipient of the NSPE Award for his outstanding service to the engineering profession. New officers were installed at the banquet with Dr. Clark A. Dunn taking over the presidency.

Featured speaker at a luncheon on June 13 was Bertram D. Tallamy, Federal Highway Administrator, who dis-

Incoming NSPE President Clark A. Dunn, left, presents Garvin H. Dyer, 1957-58 president, with the past president's certificate.

cussed the role of the professional engineer in the nation's huge road program.

John M. Dalton, attorney general for the State of Missouri, was the guest luncheon speaker on the following day. He spoke on "The Importance of Ethics to the Professional Man."

In his "State of the Society" address, Mr. Dyer, who attended twenty-five state society meetings plus chapter and many other meetings during his term of office, told the group in regard to an increase in dues that "The time has come for us to stop thinking 'little' and to start thinking 'big'. I firmly believe that we must provide our Society with adequate finances if we are to take our destined place in the profession and if we are to successfully take advantage of the opportunities now presented to us," he said.

In addition to the professional meetings, regional luncheons, conferences, and social activities, the members and their guests visited a large number of industrial exhibits.

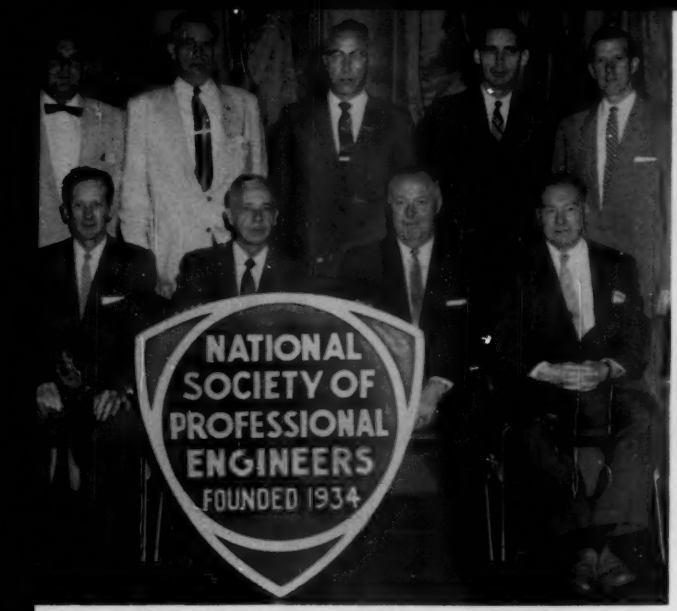
E. W. Butler was general chairman for the meeting, and Mrs. Butler handled the ladies' program.

In conjunction with the NSPE meeting, the Missouri Society also held its annual meeting on June 14 with President H. W. Honefenger presiding over the sessions. Featured at the get-together was a panel discussion on "Young Engineers and Professional Attitudes."

Committee reports follow:

Membership

Due to the necessity of preparing this report prior to the completion of the membership year on July 1, 1958, the data used are necessarily incomplete.



Here is the new Executive Committee for 1958-59. From left to right, front row: Vice President L. Eugene Easley, Central Region; President Clark A. Dunn; Past President Garvin H. Dyer, and Treasurer Russell B. Allen. Back Row: Vice Presidents Harold A. Mosher, Northeastern Region; Lindley R. Durkee, Western Region; W. L. Hindermann, North Central Region; John B. McGaughy, Southeastern Region, and Executive Director Paul H. Robbins. Absent when photo was taken was Vice President Noah E. Hull, Southwestern Region.

As of March 31, 1958, the total membership in NSPE is 44,693; this represents a gain since July 1, 1957, of 4,179. Over this same period, 3,437 full P.E. members were added, and the total of such members is now 40,304. Every state society except two (Wisconsin and Puerto Rico) enjoyed gains in membership. These gains range from as low as three per cent (Nevada) to as high as eighty-eight per cent (South Dakota and Montana).

Although there will no doubt be further additions in members in the remaining three months of the membership year, there is every possibility that such gains will be more than offset by losses due to delinquency. Therefore, the above figures will come close to representing the over-all net accomplishment for the year. Currently, the number of such delinquents is 2,151, and this figure must be greatly reduced if we are to accomplish any significant gain in membership during the current year.

A membership contest was conducted from April 30, 1957, until April 30, 1958, under rules similar to those adopted in previous years. Because of the increased number of member state societies and the membership increase in some states, a rearrangement of states was deemed advisable by your Membership Committee. State societies were grouped into six groups. The winners of the 1957-58 contest were: Group I—Montana . . . with a net gain of 306.7 per 1000 prospects; Group II—Arizona . . . with a net gain of 121.6 per 1000 prospects; Group III—West Virginia . . . with a net gain of 117.7 per 1000 prospects; Group IV—Kansas . . . with a net gain of 100.1 per 1000 prospects; Group V—Missouri . . . with a net gain of 52.2 per 1000 prospects, and Group VI— Texas . . . with a net gain of 39.2 per 1000 prospects.

Although the mailing campaign this year was somewhat reduced in scope for reasons of economy, the results were again encouraging. The campaign was conducted in South Dakota, West Virginia, Georgia, Rhode Island and parts of California; and the rate of increase of members in these five states was about double the rate of increase for the Society as a whole. We have now had two years of convincing results in the states in which the mailing campaigns were conducted, and the Membership Committee would recommend that such campaigns be continued in future years with whatever funds are available.

The over-all growth of the Society presents a picture which is somewhat mixed. It has been gratifying over the past two years to note the stepped-up rate of increase of members over previous periods; however, not encouraging is the fact that a yearly net growth of 4,000 to 5,000 members represents less than twenty per cent of the new additions to the engineering profession, calculated either on the basis of diplomas granted from ECPD accredited institutions, or on the basis of newly-granted licenses.

It seems to the Membership Committee that the time is right for experimenting with radical new approaches to the general problem of membership development. One of these new approaches which has generated considerable interest over the past two years is the so-called "Texas Plan." The plan consists of presenting to each graduate of accredited institutions a membership card in the Texas Society as an EIT. First year's dues are absorbed by the Texas Society, but their experience has been that a surprisingly large proportion of these members remain in the Society for succeeding years. The most convincing statistic is that in the year ending March 31, 1958, the Texas Society had virtually doubled its EIT membership.

The Membership Committee urges that every state and local chapter give serious consideration to whatever change in their constitution and bylaws which may be necessary to permit this new approach to membership development. Similarly, the National Society should consider this problem with great care, and take whatever steps, hopefully at the St. Louis meeting, which would permit waiving of the first year's NSPE dues for these prospective members. Consideration might well be given at the same time to a similar approach for engineers who have recently been granted their licenses by boards of examiners.

Next year's membership campaign may seem to be a long way away. However, now is the time to start planning for making 1958-59 the biggest membership year in the history of our Society. The contribution to membership development at the national level is necessarily limited largely to dissemination of information about the things our Society is doing and to suggesting promotional techniques which have proven to be successful. One of the most serious difficulties at the national level is the lack of information as to who will be assigned to the promotion of membership in the state and local chapter societies. One of the things that can be of help to next year's membership program is early appointment of state and chapter membership committees, and the transmittal of names of these people to the Washington office at the earliest possible date, preferably before August 1, 1958.

Past Presidents who attended the meeting included (left to right) Ritchie Lawrie, Jr., 1946-47; T. Carr Forrest, Jr., 1953-54; L. L. Dresser, 1951-52; Alex Van Praag, Jr., 1948; Robert J. Rhinehart, 1956-57; John D. Coleman, 1952-53, and Clarence T. Shoch, 1954-55.

Texas Plan for Assisting Engineers-in-Training

In April, 1956, the TSPE Board of Directors adopted a plan to give EIT membership to every 1956 engineering graduate from an accredited college who received certification as an EIT from the Texas State Board of Registration for Professional Engineers. These seniors were given membership, whether they applied for it or not, with their dues waived

(Continued on page 34)

Article Clarifies AIEE Proposal; NSPE Unity Report Adopted

It will be recalled that some time ago the American Institute of Electrical Engineers advanced a suggested division of activities in the engineering profession. In brief, the plan would assign responsibility for coordinating educational matters to the Engineers' Council for Professional Development; technical matters to the Engineers Joint Council; and professional matters to the NSPE. (See AE, July, 1957, page 28.) Because of the intense interest in the plan by the readers of the AMERICAN ENGINEER, and because of the questions which have over the months come forward, the magazine presents below a further article covering the proposal which has been written by Walter J. Barrett, president of the AIEE.—*Editor.*

I HAVE BEEN amazed at how widespread seem to be certain misunderstandings about the action taken by the AIEE Board of Directors in San Francisco, Calif., in June 1956, and at the number of incorrect statements concerning it which have appeared in the press. The Board action referred to is the one regarding intersociety relations, which was reported to the Institute members in a letter from then President Coover presented in *Electrical Engineering*, June 1957, p. 516.

The purpose of this article will be to attempt to clarify the situation and to remove some of the misunderstandings.

To begin, let me meet some of the misstatements head-on by stating certain things which the AIEE Board action did not do.

1. It did not propose that AIEE discontinue any of its interests, give up any of its activities, or put an end to any of the types of services it has been performing on behalf of its members, including students.

2. In proposing some realignment of responsibilities as among Engineers Joint Council (EJC), Engineers' Council for Professional Development (ECPD), and National Society of Professional Engineers (NSPE), it did not impose any condition whatever. For instance, it did not specify as a condition of this realignment that NSPE should open its membership rolls to nonregistered engineers.

3. It did not propose that NSPE become a constituent society of either EJC or ECPD.

4. It did not propose that EJC and ECPD combine.

5. It took no position with regard to the establishment or nonestablishment in the immediate future of an over-all unity organization for the engineering profession.

Now that we have seen some of the things which the AIEE Board action did not do, let us turn to the positive side and examine just what this action did propose.

Having observed the functioning of the various organizations in the engineering profession for a long time, and having discussed the problem of how the profession should best be organized, not once, but at practically every one of its meetings for several years, the Board on June 28 in San Francisco spent considerable time, as a "Committee of the Whole," discussing the matter in some detail. One thing which had been a cause of concern to the Board was the overlapping of certain of the activities of EJC with those of ECPD and of NSPE. Such duplication was considered highly undesirable, because it could lead to confusion and a loss of effectiveness. The conclusions reached by the Committee of the Whole were summarized in four recommendations. Immediately upon reconvening, the Board of Directors took action on these four items. I think it will be well to quote the four Board actions and discuss each of them briefly. The Board

1. "VOTED to adopt in principle, and actually to support, three organizations of a character approximating the present EJC, ECPD, and NSPE with certain functional modifications (as recommended by the Committee of the Whole) as currently most suitable to serve the over-all needs of the engineering profession.

2. "VOTED to request the President to appoint a special committee to draft, subject to Board approval, a statement to the membership and other interested parties, setting forth the proposed AIEE position on intersociety relations as recommended by the Committee of the Whole.

3. "VOTED to request the President to appoint a committee with instructions to approach NSPE with the suggestion that its membership be opened, for a period of years, to unregistered engineers holding suitable grades in technical societies subscribing to ECPD uniform membership grade standards.

4. "VOTED to rescind the instructions to AIEE representatives on the EJC Board of Directors to work for the development of EJC into an individual membership type of unity organization."

Modifications

The functional modifications referred to in action 1 provided that EJC would relinquish the activities it was then conducting in the fields of employment conditions, labor legislation, practice of engineering (code), social security legislation, and certain kinds of special surveys (the more recently initiated activity in engineering education would likewise be considered inappropriate); that ECPD would relinquish its interest in the practice of engineering (code); and that NSPE would relinquish its activities in the fields of technical education and young engineers.

Engineers Joint Council would function primarily as a co-ordinating body for technical matters crossing the boundaries of the various disciplines. It would retain its interest in the recognition of specialties, honors for engineers, the National Engineers Register, and relations with corresponding bodies in foreign countries. This is the "technical" group of activities.

Engineers' Council for Professional Development would continue its interest in the education and development of young engineers, the establishment of standards for engineering education, the accreditation of engineering curricula, and the canons of ethics. This is the "educational" group of activities.

National Society of Professional Engineers would continue its activities relating to registration of engineers and economic considerations in the employment of engineers, including salaries and fees. It alone would be responsible for formulating rules of behavior under the ECPD canons of ethics and for discipline under these rules. It would continue its activities in national affairs and national defense and would be the sole spokesman for the profession in matters of legislation affecting engineers. It would be responsible for public relations to enhance the prestige and standing of the engineering profession as a whole. (The technical societies would, of course, be free to conduct such public relations activities as they consider appropriate in their own specific fields.) The activities allocated to NSPE are those in the "professional" group.

With regard to surveys of the profession, it was the consensus that when the subject matter is technical, surveys by EJC or a similar technical co-ordinating body are proper. When the subject to be surveyed is political or has to do with economic welfare and working conditions of engineers, it was considered to be more properly the function of a body of the type of NSPE.

No Change in AIEE

It will be noted that the subject under consideration by the Board of Directors, and upon which it acted, related to the functioning of EJC, ECPD, and NSPE. There was no proposal that AIEE should discontinue any of its interests or activities or any of the services which it customarily has been giving to its members, including students. EJC and ECPD are joint agencies established by the individual membership engineering societies to carry out jointly on behalf of the members of those societies certain functions which are of broad interest to the entire profession and which can be more effectively handled in this manner. AIEE, in working through such joint agencies, does not relinquish any of its interest in or responsibility for the subject matter. Such joint agencies are composed of representatives of the various societies acting for the societies they represent, not independently of them.

Because of the variation in conditions affecting engineers in the various disciplines, it is contemplated that the engineering societies will continue to maintain committees on such matters as education, registration, professional conduct, etc., for liaison with EJC, ECPD, or NSPE, as the case may be, to insure that those groups are kept informed as to the particular viewpoints of the members of the various societies.

There can be no question but that AIEE will continue to need an Education Committee, for example, to keep alert and up to date on problems and needs in electrical engineering education, in order to interpret these to ECPD and assist ECPD in the establishment of policies and criteria pertaining thereto. In the field of any learned profession, there is no person or group of persons qualified to establish standards of education, competence to practice, ethics, etc., except the members of that profession. It is, therefore, the responsibility of the organization of the members of that profession to concern itself with these matters. AIEE is the organization of the members of the profession of electrical engineering, and, therefore, *is* the profession of electrical engineering. Its responsibility is inescapable. The fact that certain of its members who are engaged in the education of electrical engineering students may be members of certain committees of ECPD, or members of the American Society for Engineering Education (ASEE), or both, is a mere coincidence. The responsibility for standards of education in the field of electrical engineering rests with the profession as a whole. It is appropriate and convenient that it join forces with other branches of the engineering profession in setting up a joint agency for efficiently carrying out its responsibility, under guidance, but this does not relieve it of the responsibility.

The special committee provided for in action 2 of the Board was appointed. It prepared a statement which, after study and revision by the Board, appeared in the form of the letter referred to previously.

It will be noted that action 3 provided for a *suggestion* to be made to NSPE, and did not impose this as a condition related to action 1. During subsequent meetings of the Board of Directors, it was decided that if NSPE would accept this suggestion, the AIEE Board would urge all of its members to affiliate with NSPE. This appears in the letter to the membership.

Action 4 related to long-standing instructions to our representatives on the board of directors of EJC. When the proposal to enlarge EJC was adopted by the engineering societies as a result of the work of the exploratory group on unity of the profession, AIEE imposed upon EJC the obligation to give prompt consideration to converting itself from a joint body of representatives to an individual membership organization. This was considered by EJC, but the decision was in the negative. Under the functional plan for division of activities among EJC, ECPD, and NSPE, there would be no advantage in making EJC an individual membership organization.

Registration

The success of the functional plan and the strength of the organized profession obviously will be greater as more and more engineers who are members of a technical society also join NSPE. AIEE has, for many years, recommended to its members that they take steps to register as professional engineers. The Board of Directors believes that this is an essential step in the full development of the practicing engineer, whether he be a consultant or employed in industry. We urge all young engineers to register in their states as early in their careers as possible. If this advice is followed by members of all the technical societies, it is obvious that the time will come when the same people who make up those societies will be the members of NSPE or at least eligible for membership in NSPE. It is believed that NSPE can put itself immediately in a much stronger position to carry out the responsibilities proposed for it by the functional plan if, for a period of years, it will open its membership to nonregistered engineers who are otherwise qualified as evidenced by their holding suitable grades of membership in technical societies which subscribe to ECPD uniform membership grade standards. This is the reason for making this *suggestion* to NSPE as an interim measure and offering, if it is accepted, to urge all of our members, both registered and nonregistered, to join NSPE.

One Society

If, eventually, it appears desirable to amalgamate all of the various societies into one unity organization for engineers, AIEE believes that the adoption of the functional plan will facilitate this end. AIEE is not at this time taking a stand for or against such eventual amalgamation. However, even without such eventual amalgamation, we believe that the functional plan would be a big step forward in the organization of the profession, and would permit, indeed would promote, more effective performance. It is recognized that there are certain practical obstacles in the way of establishing an over-all unity organization at the present time. To mention but one: The American Medical Association and the American Bar Association are classi-

fied by the Director of Internal Revenue under paragraph 501(c)6. Undoubtedly, an over-all engineering unity organization would be similarly classified. The individual membership engineering societies today, other than NSPE, are classified under paragraph 501(c)3. These societies are embarked upon a plan for raising funds for the erection of a new $10 million United Engineering Center fronting on United Nations Plaza in New York City. Contributions to organizations classified 501(c)3 are deductible to the donor for tax purposes; contributions to organizations classified in 501(c)6 are not.

If we could have the clear-cut nonconflicting functional organization contemplated in San Francisco and if, in addition, all the eligible members of the technical societies were also members of NSPE, we would have an organization of the profession which would indeed be strong. Certain of the other engineering societies have been favorably impressed by the functional plan and have taken steps to call it to the attention of their members. It is to be hoped that the other societies will take parallel action and that the plan may receive the positive endorsement of all groups.

Just before this article was sent to the editor, it was learned that the Council of the American Society of Mechanical Engineers (ASME), meeting on November 30, 1957, approved the recommendation of their Organization Committee ". . . that ASME endorse the 'AIEE plan,' as outlined in M. S. Coover's March 18, 1957, letter to President Ryan." The Council also indicated its willingness to explore the plan with the organizations involved. This is indeed good news. It is most heartening to find ASME and AIEE, two of the largest segments of the engineering profession, in agreement regarding what seems to be the most constructive proposal yet advanced for straightening out the somewhat tangled organization of the profession.

Illustrative of the need for clarification are the actions of AIEE and some other societies in approving the proposed affiliation of NSPE with ECPD, and the recommendations by certain societies that NSPE join EJC. These relationships were not contemplated by the AIEE Board at San Francisco and would seem to be inconsistent with the proposed separation of the fields of interest.

At the time "The Functional Plan" was presented, the NSPE appointed a Committee on Improved Professional Activities under the chairmanship of Past President Allison C. Neff. The Committee distributed the AIEE proposal to the state societies and local chapters with the request that it be given serious study, and that opinions regarding it be returned to the Committee. It is upon these opinions that the Committee report printed below was based. The report was read to, and approved by, the Board of Directors of NSPE at the recent meeting in St. Louis.—*Editor.*

At the Board meeting in Dallas in June, 1957, the Inter-society Relations Committee recommended:

(1) that the Society give careful consideration to the AIEE Functional Plan for organization of the engineering profession as proposed by its President, M. S. Coover, to the members in a letter of June, 1957, with its suggestion of re-examination of NSPE membership requirements, and

(2) that it consider again the advisability of applying for membership in Engineers Joint Council.

In accordance with the direction of the Board, the president appointed this special Committee to conduct the studies recommended by the Inter-society Relations Committee including "other proposals pertaining to the subject of unity."

Report

Our Committee has concentrated on the study of Part One of our assignment, the AIEE Functional Plan and its corollary suggestion for "expansion of NSPE membership."

The members of our Committee, who are all members of two or more engineering societies, have for a long time felt concern about the excessive duplication of activities by some of these societies. This duplication results in: Waste of members' dues; waste of officers' and committee members' time; dilution of the impact of these activities on their objectives; confusion in the minds of those at whom the activities are directed, and cancellation of the effect of these activities where two organizations may be working at cross purposes.

Therefore, this Committee commends AIEE on its proposal to separate and realign the responsibilities for activities of interest to all branches of the profession to the end that Engineers Joint Council (EJC) provide the medium for coordination and cooperation in technical matters, Engineers' Council for Professional Development (ECPD) in educational matters and the National Society of Professional Engineers (NSPE) in professional matters.

This Committee recommends that the NSPE Board take action to approve, in principle, the AIEE plan enunciated in paragraphs numbered 1 through 5 of Dr. Coover's letter to the members of the Institute.

It is recognized that the plan cannot become fully operative until approved by the other interested parties.

When the constituent societies of ECPD and EJC approve the Plan and implement its provisions, the Committee *recommends* that NSPE then adopt the Plan.

Pending such favorable action by the constituent societies of ECPD and EJC, the Committee recommends that NSPE continue those joint activities in which it has been participating in the past, and cooperate in all other activities leading to full implementation of the Plan.

As NSPE has vigorously refrained from entering into technical activities (the suggested field of activity for EJC) and thus, in essence, has been practicing the basic concept of the Plan since 1934, it has no activities in this field from which to divest itself.

NSPE has no activities conflicting with those of ECPD. It proposes to continue its activities in support of ECPD programs.

* * * * *

Paragraph Number 6 of Dr. Coover's letter to the AIEE members said, in part, ". . . NSPE should put itself in a position to represent the profession more completely by expanding its individual membership organization to include those qualified members of the profession whose work does not by law require registration as well as registered engineers. . . ."

As the AIEE proposal, as expressed by Dr. Coover, affects some basic philosophy of NSPE, your Committee felt it essential to obtain an expression of opinion from the membership, speaking through their chapter and state society officers. There are a number of ways in which this objective could be accomplished. Accordingly, five plans, together with a simple questionnaire, were sent in December of 1957 to the 360 chapter presidents and forty-six state society presidents for an expression of opinion.

The results of the survey indicated that the majority opinion of those who responded were in favor of continuing registration as an essential requirement for membership.

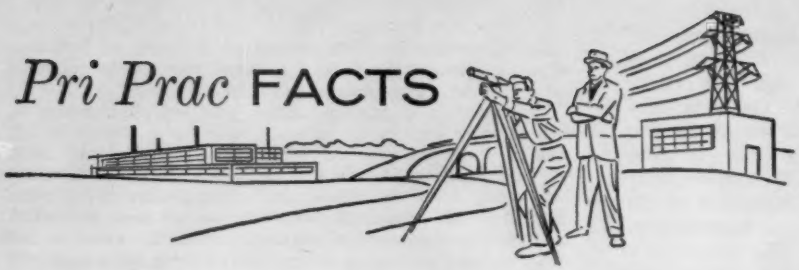
There was, however, considerable expression of opinion for considering membership of nonregistered but qualified engineers, who are members of technical societies who subscribe to ECPD standards of membership, with and without the right to vote at various levels of our organization. This reflects the desire of the respondents to extend the membership of NSPE in any reasonable way to assist in the implementation of the AIEE Plan and to advance unity of the profession.

As a result of these reactions and the deliberations of the Committee, the Committee offers the following recommendations:

(1) Membership requirements at the national level remain unchanged at this time.

(Continued on page 41)

Pri Prac FACTS



ACTIONS taken by the Private Practice Section, as well as items of interest to the NSPE Board of Directors, are reported elsewhere in this issue in the minutes of the Board meeting. The annual meeting of the Section produced discussions of interest to consulting engineers. Brief comments on those discussions follow.

A breakfast meeting, attended by over seventy consulting engineers, was the setting for the Kansas Section's story. President Murray Wilson of that section recounted the events of the last twenty-one months and introduced several section members from Kansas. A series of meetings culminated December 7, 1957, with a group of decisions to secure a secretary-manager, to establish a headquarters in Topeka, to provide for an annual budget of about $19,000, and to secure funds by assessment of the participating firms. At the meeting promissory notes were circulated and the budgeted amount was secured. The assessment is on a sliding scale basis. In the spring of 1958, Donald P. Schnacke, mechanical engineer and attorney-at-law, was employed as secretary-manager. President Wilson introduced him so that he might tell of some of the Section's accomplishments to date. Notable amongst these are a monthly newsletter, a manual of inter-professional practice and a brochure of consulting engineering firms and consulting engineering procedures designed for distribution to prospective clients. The aggressive attitude of this section was apparently received as a challenge by many of the state sections and their representatives.

Morning and afternoon meetings were devoted to open forum discussions. The subjects ran the gamut of fees, professional liability insurance, employer-employee relations, state and chapter section progress, and ethics.

Chairman Frank Sanford of Task Force 2 reported on progress of his committee's study on the subject of fees. The 1956 Compilation was fully reviewed at a full committee meeting on June 12. It will be ready for release this fall. It was emphasized that there was no intent to specify percentage rates or to indicate what should be included in any state manuals. The purpose is to suggest uniform terminology and to provide information for use between several state societies.

Chairman Arlow Ferry and others lead the discussion relative to professional liability insurance. Victor O. Schinnerer, the insurance company's representative, discussed features of the policy and the modifications that have taken place in the fifteen months since the insurance was placed in effect. The number of policies sold has indicated tremendous interest. Downward modification of premium rates and the availability of a 3-year term policy has resulted in a saving of approaching twenty per cent of the original charges. During the same period, coverage has been improved.

The Nominating Committee, under the chairmanship of J. B. McGaughy, submitted the slate of Section officers for the coming year and they were elected without dissenting vote. They are as follows:

Chairman: Leslie C. Gates, P. O. Box 672, Beckley, West Virginia.

Secretary: A. M. Gompf, 1003 N. Calvert St., Baltimore 2, Maryland.

Vice Chairmen: *Northeastern Area:* James P. O'Donnell, 39 Broadway, New York, N. Y.

Southeastern Area: Arthur C. Miller, c/o Michael Baker Inc., Northview Drive, Jackson, Mississippi.

Southwestern Area: Tom Mann, c/o Mann Engineering Co., 1605 West Second, Roswell, New Mexico.

Central Area: Alfred H. Samborn, Hatch, Samborn, Steketee & Associates, Toledo Terminal Building, Toledo 4, Ohio.

North Central Area: Brandon H. Backlund, Poppleton Ave. at Saddle Creek Road, Omaha 6, Nebraska.

Western Area: John Stufflebean, 211 West Pennington, Tucson, Arizona.

Upon action of the Section the immediate past chairman will be added to the list of officers.

Considerable discussion was had on the statement of ethical practices in regard to one engineer checking another engineer's work. The Section adopted and the Board of Directors later approved a statement as contained in the minutes of the meeting.

Several members discussed the organization and operation of state and chapter sections and it was of particular interest that the chapter sections engendered excellent discussions. Similarly, there was a very active discussion on the subject of employer-employee relations. Many firms presented methods used to indicate their belief in the advantages of close relationships. The discussion included items of encouragement of participation in professional society matters, the proper display of registration certificates, recognition in salary when registration is reached, and the use of bonuses or profit-sharing plans, pension plans and other similar items. The reactions of employees were brought out by several excellent discussions.

The NSPE was requested to enter an appearance before the United States Supreme Court in the case of Secretary of Labor vs. Lublin, McGaughy & Associates under the Fair Labor Standards Act. The Board of Directors approved the idea of the Section receiving funds to take care of the expense of this case appearance as amicus curiae. In a separate action the NSPE Board of Directors approved the acquisition of voluntary contributions which in turn will be used to help defray the costs of legal actions involving charges of violation of the Wage-Hour Law and similar cases of interest and importance to all consulting engineers.

The Section is indebted to the Missouri Society of Professional Engineers and NSPE's staff for providing excellent facilities for the Section's annual meeting.—**End.**

DUNN

(Continued from page 25)

responsibilities that are ours require of us more than the shallowness of celebration; they merit the most sincere dedication. The National Society's recognized stature and esteem has been achieved by the wise and unselfish action of many individuals. Let us each assure that continued march of progress as we accept the Apostle Paul's admonition—

"When I was a child, I spoke like a child, I thought like a child, I reasoned like a child; when I became a man I gave up childish ways."

Will you join me in dedicating yourself to achieving the coming year's objectives?—**End.**

N.S.P.E. Believes

The Importance of Membership

By Paul H. Robbins, P. E.

Executive Director

N. S. P. E.

EVERY member of NSPE is convinced that membership in the professional society is worthwhile else he would not continue to support the Society. The values of membership, however, vary from individual to individual. Some are members because they feel the activities of the Society deserve the support of registered professional engineers; some are members because by so doing they are recognized as a part of an organized body of professional people devoted to high standards and service to the public; some are members because through membership they receive information, service and value which can be secured from no other society and some are members because of the associations they gain with other engineers in their local chapters, state societies and national meetings.

Whatever may be the individual's reason, however, membership supports a great variety of professional activity which benefits every engineer. All members if asked whether or not it was desirable for the Society to have more members would undoubtedly reply in the affirmative. Nevertheless, far too many members consider the job of interesting others in lending their support to the professional activities of the Society the responsibility of someone else, usually the officers or the Membership Committee.

With the Society now totaling more than 45,000 members and representing through state societies and local chapters more than 55,000 engineers, the growth of the Society has been most encouraging. With engineering emerging as it is to a position of considerable responsibility in our nation, tremendous challenges face the profession and the Society in the future. The profession and the Society will be able to meet these challenges only to the degree that members are willing to put their shoulder to the wheel through organized effort and concentration to solve the many problems which will face us.

It is an oft-repeated axiom that in numbers there is strength. This is certainly true of organized activity in the professional development of engineering. NSPE has always believed that the strength of the profession will only be as great as the accumulated interest of the individuals who make up that profession. This is the foundation on which NSPE has stood since its founding, that a professional society with the objectives of developing engineering to a position where it can assume the responsibility the nation expects must be based on the individual member.

But mere membership is not sufficient. True, the dues that each member pays facilitates the work of the Society through providing the many services and the ability of those devoted leaders and workers to accomplish the programs and activities the Society sponsors. But, the effectiveness of a volunteer organization such as NSPE is directly proportional to the willingness of the members to work at the many assignments and opportunities the organization presents. NSPE with its three-level organization provides more opportunity for individual participation than many other organizations. There are perhaps 3,000 committees in the professional society, to say nothing of well over 2,000 officer posts to be filled each year.

It is obvious that these important positions which provide the stimulus for activities in professional matters require an aggressive, alert, willing membership. Dr. Henry Heald, president of the Ford Foundation, made a statement recently which referred to the grass-roots level of government activity and its importance in our democratic form of government. As I have indicated with parenthesis, these words, slightly paraphrased to apply to our Society, are equally true: "It is at the grass-roots level of (our Society) that local officials face the greatest challenge and the greatest opportunity for leadership. The problems that face (our state societies and local chapters) figuratively scream out for attention and leadership. Here is a frontier where you, as public servants (of the profession) with ingenuity, vision and ability can really pioneer. You cannot wait for the other fellow to solve your communities' problems. If these challenges are to be met, it will be through the achievement of people such as you—the working corps of America's professional servants, and the public spirited members of the profession all over our nation who stand at your side."

NSPE believes the professional problems of tomorrow will be solved to the degree that individual members are willing to recognize these problems as their own, are willing to give of their time to support their professional organization, and through the mechanism it provides consider at the grass-roots solutions in the best interest of the nation and the whole profession.—**End.**

The Board of Directors 1958-59

BOARD

(Continued from page 28)

until the beginning of the next dues paying period (January 1, 1957). This was membership in TSPE only. They did not become members of NPSE until they paid dues.

In 1956, TSPE added 527 newly-graduated engineers to their EIT roster under this plan. Members of this group received their first bill for dues in 1957 and 358 paid. A total of 169 or about thirty-two per cent at the end of the year were dropped for nonpayment of dues.

At the 1956 October Board meeting the Directors decided to modify this program and it was handled in the following manner during 1957. The Board decided to continue to waive the dues, until the beginning of the next fiscal year, for not only the newly-graduated EIT's but for *all* EIT membership applicants. However, TSPE would not automatically make every certified engineering graduate a member but only those who applied for membership. But every 1957 graduate received an invitation to become a member of the Society.

During 1957 letters and application cards were mailed to 828 engineering graduates and from this group obtained 411 new EIT members. This is approximately a fifty per cent return from the letters and they are still coming in.

The results of the modified plan followed in 1957 cannot be compared to the results of the plan of 1956 until the end of this year. However, it is felt that the percentage of drops at the end of 1958 will be much less than last year because every one of the EIT's added to the roster during 1957 applied for membership. It is thought that the percentage of drops at the end of 1958 will be more in line with P.E. drops and certainly not more than ten per cent. To substantiate this thinking is the fact that 300 of the 411 EIT members added last year have already paid their 1958 dues.

Board Action: The Executive Committee recommended to the Board that NSPE, as a part of its membership program, cooperate with those states that wish to take up the Texas Plan, including newly-registered PE's and EIT's recognized by the state boards of registration. This introductory membership will include the AMERICAN ENGINEER, Annual Report, and, if specifically requested, Legislative Bulletin, Employment Practices Newsletter, pins, and certificates, and that the plan be given priority over the mail campaign as far as finances are concerned. The recommendation was approved.

Functional Section of Consulting Engineers in Private Practice

This report contains items of information for the Board as well as items recommended for Board action.

Due to the fact that the Section's Executive Committee and the Section's annual meeting take place concurrently with the Board meeting, it has been impossible to prepare for prior release a copy of the Section's report to the Board of Directors.

1. The following new officers were elected, June 13, upon the basis of a previously-appointed Nominating Committee report.

Chairman: Leslie C. Gates, West Virginia; Vice Chairmen: Northeast Area—James E. O'Donnell, New York; Southeast Area—A. C. Miller, Mississippi; Central Area—Alfred H. Samborn, Ohio; North Central Area—B. H. Backlund, Nebraska; Southwest Area—Thomas T. Mann, New Mexico, and Western Area—J. H. Stufflebean, Arizona.

Secretary: A. M. Gompf, Maryland.

The Nominating Committee: John B. McGaughy, Chairman, Warner Howe, and Elmer S. Barrett.

2. By vote of the Section in annual meeting and subject to a bylaw change requested hereinafter, the Section desires to add to its officers the immediate past chairman.

3. By vote of the Section in annual meeting and subject to the bylaw change requested hereinafter, the Section wishes its officers to have their terms of office concurrent with the terms of office of the NSPE officers.

4. Attachment 1 is a brief statement of the current status of the work of Task Force No. 2 with regard to the subject of "Fees."

5. Task Force No. 3 has presented its report on the subject of a study of what is being done with regard to ethics in the consulting field of the profession. The Executive Committee of this Section has received the report and has recommended that it be given further study prior to action.

6. Task Force No. 4, charged with continuing observation and consideration of the professional liability insurance policy, reports that there are now some $300,000 in premiums paid in, that a substantial reduction in premium has been obtained during the last year and that a further reduction in premium is available where insurance is purchased on a three-year term basis. These two reductions average approximately twenty per cent of the initial offering. There have been improvements in the coverage offered. The task force will continue its efforts.

7. The annual meeting of the Section on June 13, started with a breakfast, attended by some seventy consulting engineers. The Kansas Section presented a story of progress that challenges the efforts in other states. The morning session was attended by over 100 persons and the afternoon session by over eighty. The Section, except for mandatory business, devoted its efforts to open-forum discussions dealing with such subjects as fees, employer-employee relations, professional liability insurance, progress in state and chapter sections, the Wage-Hour Law as it affects consulting engineers, and other subjects of similar importance.

8. The need for a mailing list of consulting engineering firms, principals, and employees is essential. Progress is being made in cooperation with the subcommittee composed of employees of consulting engineering firms. This work is continuing rapidly.

9. There was considerable interest shown in further improving the wording and applicability of the Code of Ethics and the Rules of Professional Practice.

10. Another subject receiving much discussion by both the Section and its Executive Committee deals with a proper and equitable basis concerning the subject of outside or secondary work by those employed by governmental agencies.

11. A great deal of interest has been shown in the fields of control of free engineering and package deals. The new

(Continued on Page 41)

With Our Members . . .

Annual Maryland Meeting

Shown at the recent annual meeting of the Maryland SPE are, l. to r.: W. V. Krewatch, president of the Delaware Society (at the time of the photo); Russell B. Allen, NSPE treasurer; B. E. Beavin, Sr., president of the Maryland Society; Arthur M. Gompf, NSPE national director from Maryland; Allan H. Kidder, NSPE vice president, and Col. Michael J. Blew, NSPE membership representative.

Connecticut Society Elects Mortenson Pres.

The Connecticut SPE has recently elected Ernest D. Mortenson, of Stratford, as president for the coming year.

Mr. Mortenson is a past president

Ernest D. Mortenson

of the Fairfield County Chapter and has served as vice president of the Connecticut SPE for the past three years. In 1954, he was appointed the first CSPE managing editor of the *New England Professional Engineer magazine.*

News Gets Stale
Stale News Isn't Printed . . .

SO*—Stories and photos for the *American Engineer* about outstanding chapter or state society events should be submitted *immediately after the events take place.

Even better — *advance stories* whenever possible.

New Jersey Group Gives Scholarship

The Union County (New Jersey) Society of Professional Engineers recently awarded the first annual Fred S. Frambach memorial scholarship to John Berzinec of Rahway for study at Stevens Institute of Technology.

The award, valued at $475, is in memory of Mr. Frambach, a Westfield engineer who died in March. The award is to be presented annually to a Union County high school student accepted at an accredited engineering college in the state of New Jersey.

New York State SPE Honors P. M. Corry

The New York State Society of Professional Engineers recently passed a resolution designating Patrick M. Corry as treasurer emeritus in recognition of his long tenure as treasurer of the Society.

Mr. Corry, who recently retired as treasurer, was a founder of the NYSSPE.

Klepper Elected Chapter President

The annual meeting of the Central New York Chapter of the New York State Society of Professional Engineers was held recently. The following officers for 1958-59 were elected: Lawrence Klepper, president; James Konski, vice president; Seymour Ribyat, secretary; Albert Cassel, treasurer; Charles Pratt and John Christiana, directors.

Lorain County Society Hears Guest Speaker

The Lorain County Society of Professional Engineers was addressed by Joseph Richardson, plant manager, Lorain Assembly Plant of The Ford Motor Company with "Engineering a New Ford Plant" at their May meeting. Mr. Richardson has been with the Ford Motor Company since 1948 and has served in various capacities before coming to Lorain from Kansas City Assembly Plant where he was production manager.

Mr. Richardson outlined the necessity for setting up assembly plants throughout the country and particularly for locating an assembly plant in Lorain County, factors involved in designing plant size and shape, and many of the problems inherent in placing the plant into successful operation.

Also present and recognized by the Lorain County Society for his twenty-eight years as a science teacher was Harold Freshwater of Lorain High School. Mr. Freshwater was recently proclaimed, the "Outstanding Science Teacher of The North Central District in Science Teaching," by The Ohio Academy of Science at the State Science Day recently in Akron. A winner of one of the student exhibiting science projects was Alden Fairburn, Lorain, whose father, A. J. Fairburn, is a member of the Lorain County Society of Professional Engineers.

Toastmasters Club of Dallas, Texas

Formed in September of 1956, the Dallas Engineers Toastmasters Club, Dallas, Tex., recently elected the following new officers; seated, l. to r.: Robert S. Sandifer, treasurer; James G. Litherland, president; Paul A. Crick, vice president; standing, l. to r.: Walter P. Glancy, vice president, Joe V. Williams, secretary, and Alan H. Smith, sergeant-at-arms. All are NSPE members.

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BOARD

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administration has been requested to give intensive and early study to this subject.

12. The Section continues its interest in improving and interpreting policies of the Federal agencies with regard to the employment of consulting engineers. With the help of the NSPE headquarters staff much has been accomplished in recent years. There seem to be some instances where departure from established and desirable policies is indicated and the Section will continue its efforts to improve the method of securing professional assistance.

Review of East Lansing Action

At the spring meeting of NSPE at East Lansing, Michigan, on February 13-15, 1958, the Functional Section for Consulting Engineers in Private Practice submitted the following in its report to the NSPE Board of Directors:

"*Ethical Practices.* It has been reported to this Section that in some instances consulting engineers have been retained by governmental agencies to check plans prepared on behalf of that agency by other consultants. This has been apparently without knowledge of the first (designing) consultant.

"After study we have concluded that basically there is no violation of stated or implied ethical practices. However, a loosely-established procedure could lead to unfortunate relations between the several parties and possibly to conditions detrimental to the profession as a whole. Therefore, we urge adoption of the following statement designed to express a policy of NSPE.

"Recommended action: To protect the best interests of both parties to an engineering service agreement and to promote the best interests of the profession, it is suggested in the case of a client desiring to have his consultants' work reviewed by another consulting firm or individual outside the client's regular staff, that such review be conducted in line with the Rules of Professional Conduct."

The above-quoted portion of the Functional Section's report was accepted by the NSPE Board and the recommended action was approved.

Recent developments indicate a degree of misunderstanding regarding the exact interpretation of this NSPE statement in relation to Rule 45, i.e., with respect to the reviewing of plans by one consulting engineer which have been prepared by another consultant.

The purpose of this further statement of the Functional Section for Consulting Engineers is to clarify and emphasize the original statement. Appropriate action by the NSPE Board of Directors is requested as stated hereinafter.

Rule 45 of the "Rules of Professional Conduct" provides specific standards and procedures for ethical review in declaring:

"He will not review the work of another engineer for the same client, except with the knowledge or consent of such engineer, or unless the connection of such engineer with the work has been terminated."

It should be noted that Rule 45 provides three ethical circumstances under which such reviews may be conducted. They are:

1. After *termination* of the first consultant's connection with the project, or
2. With *consent* of the first consultant, or
3. With the first consultant having knowledge of the review.

The Functional Section for Consulting Engineers of NSPE recommends to the Board of Directors that the principle expressed in the statement adopted at the East Lansing meeting be reaffirmed and endorsed, and that the following specific policy declaration be adopted and brought to the attention of consulting engineers:

Review of Reports, Plans and Specifications

Whether or not a consulting engineer may ethically review reports, plans or specifications prepared by another consulting engineer for the same client, depends upon his adherence to Rule 45 of the Rules of Professional Conduct. This rule states that he may so review another's work when:

1. The first consultants' connection with the project has been *terminated*, or
2. The first consultant has *consented* to the review, or
3. The first consultant has been given knowledge of the intended review.

It is the belief of the Functional Section for Engineers in Private Practice that an engineer whose reports, plans, specifications or design data have been reviewed by another engineer should be advised of the findings of the reviewing engineer and given the opportunity of commenting on the findings.

In construing and applying this rule, and all the rules, a consulting engineer must adhere to the declarations and principles of the Canons of Ethics, the Rules of Professional Conduct and the Engineers' Creed.

Report of Task Force No. 2

1. Prepare for immediate release a Summary of State Society Fee Schedules and Manuals of Practice. This will bring the 1956 Compilation and Comparison report up to date and include more material on definitions and also recommendations on some items.

2. Adopt in principle the EJC Report No. 107 and refer to it as an available source of information and suggestions. Will *not* ask NSPE to republish this report at present time.

3. Next step—work toward preparation of a Model Manual of Practice to be available for use by state societies who may wish to adopt it, with additional material or modifications, for their use.

Further Objectives:

1. Aid state societies in assembling material which may serve as an aid to both engineer and client in considering agreements and terms for work to be performed.

2. Select definitions and terminology from present manuals and suggest them for general adoption, to promote uniformity among the states.

3. Compile fee percentages and point to range and averages, but *not* to suggest any particular values for others to adopt.

Items Recommended for Board Action

1. Conforming to the brief statement noted in the first part

UNITY

(Continued from page 37)

(2) That the several state societies seek ways and means of admitting qualified persons to membership, and take such steps as may be necessary in their respective states, to attain this objective.

Note: Your Committee recognizes that some state societies have provision for membership, at the state and chapter level only, for unregistered but qualified men. Unregistered, interested persons may avail themselves of this opportunity of identifying themselves with the state and chapter organizations and doing effective work there.

The members of the Committee wish to express their thanks to the state and chapter officers and members who studied this thorny question and gave the Committee the guidance of their best thinking through their answers to the questionnaire.

* * * * *

Part Two of our assignment, namely, that the Committee consider the advisability of NSPE applying for membership in Engineers Joint Council has been under intensive study by the Committee. Much thought has been given to the subject. Much information has been gathered relative to the subject.

Any action on this matter is necessarily contingent on the action of the Board of Directors on the recommendations pertaining to Part One of the Committee assignment. Therefore, the Committee makes no recommendation for action in this matter, at this time.

Adoption of the recommendations contained in this report, we believe, will enhance unity in the profession and will be in compliance with, and in furtherance of, the AIEE proposal.

The recommendations give full recognition to the valuable and meritorious activities of the EJC now being carried on in the technical field and ECPD in the educational field. The Committee proposes that NSPE give its full support to these two agencies, in those fields, in the furtherance of unity.

of this report, the Section requests the Board of Directors to modify Bylaw 29 to provide for an officer to be designated the immediate past chairman and to further provide that the terms of the Section officers shall be concurrent with the NSPE officers. The Constitution and Bylaws Committee has been consulted and has prepared the necessary modification of the bylaw noted.

2. This Section recommends that the National Society of Professional Engineers enter as amicus curiae the case pending before the United States Supreme Court involving the consulting engineering firm of Lublin, McGaughy & Associates in connection with alleged violations of the Wage-Hour Law.

3. The Section recommends and requests authority to receive voluntary donations from consulting engineers and other interested members of the Society for defraying the expenses involved in entering the case referred to under Item 2 above.

4. The Section submits to the Board of Directors and recommends its approval of the statement concerning ethical practices as contained in Attachment 2 hereof.

5. The Section requests additional time in which to study either directly or in connection with the Engineering Practices Committee the subject of outside or secondary employment by governmental employees.

6. The Section requests authority to raise funds to assist in protecting the interests of consulting engineers in legal proceedings.

Board Action: All recommendations were approved with the exception of No. 1, which could not be acted upon as it had not been received by the Board the required ten days prior to the meeting.

Resolutions

Resolution 8-58

(Submitted by the Wisconsin Society of Professional Engineers)

WHEREAS, the Committee for Improved Professional Activities of the National Society of Professional Engineers has requested a statement of opinion from the various state and chapter presidents and boards of directors regarding several proposed plans for NSPE action on the "AIEE Proposals for Division of Activities in the Engineering Profession," and

WHEREAS, the Wisconsin Society of Professional Engineers has a consensus regarding a fundamental aspect of membership in NSPE,

NOW, THEREFORE, BE IT RESOLVED, that the Committee for Improved Professional Activities be urged to retain in any proposed plan the concept that membership in the National Society shall be limited to professional engineers and engineers-in-training with the basic requirement of registration and subject to the conditions in Article IV-Membership of the Constitution of the National Society of Professional Engineers as published in the version of July 1, 1956.

The Resolutions Committee recommends that action be deferred, pending the recommendation of the Committee for Improved Professional Activities, in view of their continuing studies.

Resolution 9-58

(Submitted by Professional Engineers of Colorado)

WHEREAS, in 1954, NSPE deferred initiative action toward the formation of an effective and truly professional unity organization pending a more favorable climate, and

WHEREAS, recent activities by AIEE, ASME and others indicate that favorable climate now exists,

NOW THEREFORE, BE IT RESOLVED, that the Professional Engineers of Colorado urge the Board of Directors of NSPE to not only support the recent proposal by AIEE but to also assume initiative in the establishment of a representative, coordinating and regulatory body that would facilitate effective operation of the proposed plan.

The Resolutions Committee recommends that action be deferred pending a study of this Resolution and recommendations by the Committee for Improved Professional Activities.

Resolution 10-58

(Submitted by Missouri Society of Professional Engineers)

WHEREAS, every professional engineer needs a lifetime record of his professional education, experience, employment record, society membership and offices held, participation in civic, religious, and fraternal affairs; and

WHEREAS, such a record is needed to furnish data for registration in various states and will be a constant source of information during his entire lifetime for public relations; and

WHEREAS, such a booklet presented to each graduating student engineer by the NSPE would be of material benefit to the membership and public relations committees; and

WHEREAS, the booklet can include the "Canon of Ethics," "Engineers' Creed," articles about the National Society of Professional Engineers and what it offers the engineer; also the responsibility of the engineer to his profession;

NOW, THEREFORE, BE IT RESOLVED, that the Missouri Society of Professional Engineers recommend that the National Society of Professional Engineers consider the advisability of directing their Vocational Guidance Committee to develop such a professional engineers' record booklet.

The Resolutions Committee recommends that this matter should be referred to the Young Engineers Committee for study prior to any definite action.

Resolution 2-58

(Submitted by NSPE Legislative Committee)

WHEREAS, a long-standing policy of the National Society of Professional Engineers has advocated the creation of a Federal Board of Engineering Review to serve as a policy group to coordinate all engineering functions of the Federal Government, and to settle jurisdictional disputes and eliminate overlapping of operations between the several Federal agencies; and

WHEREAS, the Hoover Commission Task Force on Water Resources and Power has recommended that the Inter-Agency Committee on Water Resources be strengthened and expanded as a Water Resources Board; and

WHEREAS, the Presidential Advisory Committee on Water Resources Policy has proposed the creation of a Coordinator of Water Resources, and independent Board of Review, regional or river basin water resources committees and a permanent Federal Inter-Agency Committee; and

WHEREAS, the economy and efficiency resulting from the establishment of a coordinating review board for the development of water resources would serve the nation's best interests;

NOW, THEREFORE, BE IT RESOLVED, that the National Society of Professional Engineers encourages consideration of legislation within the principles of the various studies and reports to accomplish the organizational basis and policies for the proper utilization and development of the nation's water resources, in accordance with sound engineering principles.

Action at East Lansing, February 15, 1958: Resolution 2-58 be tabled until June meeting of the Board.

Board Action: The recommendations of the Resolutions Committee were approved.

Constitution and Bylaws

In accordance with actions at the spring meeting of the Board of Directors at Lansing, Michigan, the Constitution and Bylaws Committee was requested to report on certain changes to the Constitution and Bylaws for action at the annual meeting.

These proposed changes are concerned with: (1) Dues; (2) Expenses of representative from affiliated societies outside the continental boundaries of the United States, and (3) Affiliation of member societies in foreign countries.

At the spring meeting the Board instructed the Committee to draft proposed amendments to the Constitution and Bylaws to provide for an increase in National Society dues. This was to be effected by raising the limit from the present ten dollars for PE members and fifteen dollars for members-at-large to twenty dollars and for junior (EIT) members from five dollars to ten dollars. The Bylaw revision accompanying this was to show a suggested actual dues increase from ten dollars for PE's and MAL's to thirteen and from four dollars to six dollars for junior members.

With interest being recorded in the territories outside the continental limits of the United States, it is probable that the time is not far off when we may have state societies petitioning for affiliation in Alaska and Hawaii. In addition, there are al-

ready recognized member state societies in Puerto Rico and the Canal Zone. The present potential membership in these areas, exclusive of Puerto Rico, is so limited that they present a financial drain on the National Society. The principal elements of this cost are represented by the expense of bringing representatives of these societies to the four or five NSPE sponsored yearly meetings. No considerable increase in cost is involved in servicing members directly. It is felt that perhaps before these further territorial areas are affiliated some limitation on the expense paid participation in our meetings might be in order. It must be understood that no actual limitation on participation is intended or implied and that every member state society is to feel assured that their duly accredited representative(s) will be most welcome to participate and take an active part in our meetings. All members are equally welcome and urged to attend whenever they wish. A check of the attendance records show that Puerto Rico has had their representative attend only about one meeting each year. Usually, this has been the annual meeting. It is reported to this Committee that the Canal Zone may be amenable to the proposed limitation.

The question of possible formation and affiliation of an organization of professional engineers in a foreign country has been posed, and if this were done, what relationship could such an organization have with the National Society? This might take the form of being composed of current members of NSPE, in which case there is nothing currently to prevent them from forming, in effect, a "foreign" society similar to a state society except that they would not have NSPE Board representation. If, however, this group desired affiliation as a member foreign society with Board representation, some further provisions must be made in our Constitution and Bylaws. Another possibility is that qualified nationals of the country might want to become members. This might present some problems.

It is not believed impossible to work out a solution to this question but the Committee requests an expression from the Board as to whether they wish it to further explore the possibilities for affiliation of such groups.

Recommendations:

A. Concerning the matter of dues, this Committee recommends that the Board of Directors approve the following changes in wording, as designated by *words in italics*, and authorize submission of the Constitutional change for membership vote:

To the Constitution—

Article V—Dues

Section 1. The amount of dues of the National Society shall be determined by the Board of Directors as provided in the Bylaws, and shall not exceed *Twenty* dollars *($20.00)* per annum for a professional engineer member whose dues are collected by a member state society and *Ten* dollars *($10.00)* per annum for a junior member whose dues are collected by a member state society.

Section 2. A member-at-large shall pay the amount of dues provided in the Bylaws, which shall not exceed *Twenty* dollars *($20.00)* per annum.

To the Bylaws—

Bylaw 32—Dues

b. The dues for professional engineer membership in the National Society for members who are also members of member state societies shall be *Thirteen* dollars *($13.00)* per year and four junior member *Six* dollars *($6.00)* per year. Members joining after January 1 may pay such proportion of these dues as is provided in the member state society Constitution or Bylaws.

c. The dues for membership-at-large shall be *Thirteen* dollars *($13.00)* per year. Members joining before July 1 shall pay a full year's dues. Members joining after that date shall pay six (6) months' dues, except those joining within the last month of the fiscal year, in which case they shall pay dues for the ensuing year.

B. Concerning limitation of expenses for representatives to attend meetings, this Committee recommends that the Board approve the following Bylaw change:

Bylaw 2—Meetings

i. The National Society shall pay the expenses of one (1) national director from each member state society *within the continental boundaries of the United States,* to attend each properly called meeting of the Board, based on actual expenses not to exceed a sum equal to the cost of first-class round trip transportation, plus terminal expenses, plus an allowance for other expenses which shall be determined by the Executive Committee in advance of the meeting. *National directors representing member state societies outside the continental boundaries of the United States shall be eligible for expenses allowed as above but shall be subject to the following limitation on the annual schedule of meetings for which expenses may be allowed based on the number of current members in their respective member state society:*

Up to 200 members—Annual Meeting only
201 to 400 members—Annual plus one Additional Board meeting
401 to 600 members—Annual plus two Additional Board meetings

Accredited representatives of all member state societies will be recognized and welcomed at all duly called meetings should they wish to attend at state society expense. Under extraordinary, unusual, or emergency conditions, modifications of these expense limitations . . . etc. (Remainder of paragraph unchanged.)

Board Action: The report was accepted with final approval to come by vote of the membership.

Ethical Practices

During the administrative year 1957-58, this Committee continued application on four items not completed by the previous Committee, and received eighteen new items. Eight items were completed; seven items have been brought to the stage of requiring Board action at this meeting; five items have not been investigated sufficiently to permit making recommendations; one item is of a continuing nature; and one item is being held in abeyance.

The booklet *Ethics for Engineers,* the publication and distribution of which was authorized in June, 1957, has proved to be very popular and to be relatively inexpensive. The first two printings totaled 40,000 copies and a third printing seems to be indicated.

56-1 Uniform Telephone Listings

A survey of chapters conducted by the previous Committee showed that 67 per cent of those reporting had made no effort to request their local telephone companies to follow the type of listing recommended by NSPE.

As an aid to its deliberations, this Committee solicited suggestions from the Private Practice Functional Section, since its members are the ones most interested in telephone listings.

Recommendation

It is recommended that the existing recommended type of listing for classified telephone directories be supplemented by the following recommended type of listing.

All listings in classified telephone directories under "Engineers" headings must be in uniform size of type with no bold face or display listings and the descriptive designations following "Engineers" be headings from a list approved by NSPE.

Board Action: Referred back to Committee.

56-4 Education on Ethics

Apparently interest in ethics is increasing and articles are appearing in various publications without direct solicitation by this Committee.

Recommendation

Future committees should encourage the writing of articles on ethics and should consider the possibility of a series of short articles that could be titled, "From the Files of the Ethical Practices Committee" for publication in the AMERICAN ENGINEER.

Board Action: Recommendation Approved.

56-5 Procedures for Handling Violations of Ethics

The publication and distribution of an Outline for Handling Alleged Violations of Ethics and Practice was authorized by the Board at its meeting in February, 1958.

The "Procedure for Referrals" under Policy No. 6—Board of Ethical Review (pages 29 and 30 of "Administrative Policies") has served its purpose and does not concern BER or its method of operation.

Recommendation

It is recommended that the "Procedure for Referrals" be omitted from and that the "Outline for Handling Alleged Violations of Ethics and Practice" be included in future editions of "Administrative Policies" as a separate policy.

Board Action: Referred back to Committee for further coordination with Board of Ethical Review.

57-3 Survey of State Societies on Ethics (Private Practice Group)

During the last year, this survey was extended to include state registration boards.

An advance copy of the report of Task Force #3 of the Private Practice Group has just been received. The report recommends three points for further consideration.

1. NSPE recommend policy for control and discipline of NSPE members insofar as ethical practices are concerned.
2. NSPE work with member state societies and these in turn with the several state boards to have each state registration law contain some provision for a "Code of Ethics."
3. NSPE and member state societies assist the various state boards of registration in the control of "malpractice" by all concerned.

It also suggests a procedure for handling alleged violations of ethics by NSPE members; a procedure to control malpractice: and that alleged violations of ethics by non-NSPE members be handled by the state registration boards.

Comments

Item 1, recommended for further consideration by Task Force #3, appears to be covered by the Outline for Handling Alleged Violations of Ethics & Practice (Item 56-5) which was approved by the Board on February 15, 1958.

The procedures suggested for handling alleged violations of ethics by NSPE members and for malpractice are covered by the Outline for Handling Alleged Violations of Ethics & Practice and by Chapter Handbook Sheets III-F.

Recommendation

It is recommended that, in those locations where acceptance of a code of ethics is not included in the registration procedure, state societies be encouraged to work with state registration boards toward the inclusion of this feature. It is also recommended that state societies be encouraged to work with state registration boards in the control of malpractice and in developing a procedure for disciplining non-NSPE members for violations of ethics.

Board Action: Referred back to Committee and to Functional Section for Consulting Engineers for further study.

58-1 What Constitutes Competitive Bidding

Roy W. Johnson has developed a definition of competitive bidding with which the entire Committee concurs.

Recommendation

It is recommended that the following definition be adopted by NSPE.

"Competitive bidding for professional engineering services is defined as the formal or informal submission, or receipt, of verbal or written estimates of cost or proposals in terms of dollars, man days of work required, percentage of construction cost, or any other measure of compensation whereby the prospective client may compare services on a price basis prior to the time that one engineer, or one engineering organization, has been selected for negotiations. The disclosure of recommended minimum or median fee schedules prepared by various engineering societies is not considered to constitute competitive bidding."

Board Action: Referred to Functional Section for Consulting Engineers for recommendations.

58-2 Integration of Activities of BER with Those of EPC

As currently set up, the Board of Ethical Review and the Ethical Practices Committee cannot communicate directly with each other. Unofficially, the Ethical Practices Committee has sent copies of its opinions to the Board of Ethical Review and the Board of Ethical Review has advised the Ethical Practices Committee of its deliberations. It would also be desirable for a person accused of violating ethics or practice to request the rendering of an advisory opinion by the Board of Ethical Review.

Recommendation

It is recommended that the following two duties be added to those of BER in Policy No. 6.

"6. The Board of Ethical Review shall send copies of its opinions to the Chairman of the Ethical Practices Committee and to the Executive Director."

"7. The Board of Ethical Review shall render an advisory opinion when so requested in writing by the person accused of violating ethics or practice."

And that the following addition be made to Bylaw 12—Ethical Practices Committee.

"4. To send to the Chairman of the Board of Ethical Review copies of opinions given in answer to written inquiries regarding ethical practices."

These recommendations have been discussed with and have the concurrence of the Board of Ethical Review.

Board Action: Referred back to Committee for coordination with Board of Ethical Review.

Committee Structure

The Committee Structure Committee reported on a study taken this year concerning the activities of the NSPE president and the degree to which his duties and activities could be delegated to others without serious loss of effectiveness. The objectives of this study were to reduce his current heavy burden and to help him avoid unnecessary increases. A comprehensive listing was made of these activities. Committee members and past presidents were asked to review this listing and to indicate those items which the president only should do, those which should be delegated to others, and those which the president shouldn't have too concern himself with at all. The analysis of the questionnaire was presented to the Board. A resolution was presented that: "The individual state society visitations by invitation which have grown to become a customary part of the duties of both president and of the executive director shall henceforth be the responsibility of the respective regional vice president; except that such visitations as are already scheduled by the president and by the executive director may be honored; and except that the Executive Committee may authorize such visitations of the president and of the executive director as in its opinion are justified." This recommendation was accepted as a tentative policy and members of the Board will give consideration to it between now and the October meeting and consider it for adoption as permanent policy at the next Board meeting.

Military Affairs

The Military Affairs Committee, formerly known as the National Defense Committee, has made a study of proposed Federal legislation, particularly bills concerning pay increases for engineering and scientific personnel in the Armed Services. The recommendations of the Committee were coordinated by NSPE and forwarded to various Congressional committeemen.

(Continued on page 48)

STRICTLY BUSINESS

Personalities . . . **Harry E. Eiber** has been appointed a vice president of **The Austin Company,** Cleveland, Ohio . . . **Ric-wiL, Incorporated,** announces the appointment of **Edward L. Logrbrinck** as director of marketing . . . **Richard A. Pim** has been named chief engineer of the Eastern Division of **L.O.F. Glass Fibers Company** and will be headquartered at Waterville, Ohio . . . **George F. Murphy** has been appointed chief construction engineer for **Aluminum Company of America** . . . **H. E. Lore** has been appointed manager of the Engineering and Construction Department of the Machinery Division of **Dravo Corporation,** Pittsburgh, Pa. . . . **The M. W. Kellogg Company,** New York, N. Y., a subsidiary of **Pullman Incorporated,** announces the appointment of **Donald M. Marshall** as sales engineer in the Fabricated Products Division. **Dr. Raymond E. Vener** has also been named manager of Industrial Research . . . **Charles Homer,** president of **Stran-Steel Corporation,** Detroit, Mich., a unit of **National Steel Corporation,** has announced the appointment of **Hillery G. Knecht** to the position of vice president in charge of manufacturing and engineering . . . **Calvin G. Brown** has recently assumed the post of Director of Public Works for Mason City, Iowa . . . **International Resistance Company,** Philadelphia, Pa., announces the appointment of **George C. Williams** as chief engineer.

Mr. Eiber

The appointment of **Frank S. Fitzgerald** as chief engineer of **Adams Engineering Company, Inc.,** Miami, Fla., has been announced by **Charles Silvers,** president . . . **William B. Lynn** has been named engineering manager for **General Electric's** Meter Department, Somersworth, N. H. . . . **Temco Aircraft Corporation,** Dallas, Tex., has promoted **I. Nevin Palley** to senior vice president and **Robert E. Galer** to vice president-engineering, according to an announcement by President **Robert McCulloch** . . . **M. H. Cutler** has been appointed to assistant engineering manager for **Stone & Webster Engineering Corporation.** In other announcements, the firm announced that **Robert S. Boyd** has been appointed manager of the Appraisal Division, and **Elliot F. Jaquith** appointed chief engineer of the Industrial Projects Division . . . The appointment of **John A. Dersch** as director of engineering for the **Read Standard Division** of **Capitol Products Corporation,** York, Pa., has been announced . . . **James Peterson** has joined the **Cyril Bath Company,** Solon, Ohio, as chief engineer . . . **Charles R. Riley** has been appointed chief engineer of the **Baltimore and Ohio Railroad** . . . The promotion of **Arthur M. Moody** to chief product development engineer and **Arne Frank** to senior development engineer has been announced by **The Trane Company,** Milwaukee, Wis.

Mr. Cutler

W. K. Lowe and **A. G. Nicola** recently received new engineering appointments at the **Sanderson-Halcomb Works** (Syracuse, N. Y.) of the **Crucible Steel Company of America. Mr. Lowe,** Works chief engineer, was named senior staff engineer, while **Mr. Nicola** was named to **Mr. Lowe's** vacated post . . . **John F. Harrigan** has rejoined the Grand Rapids Division of **Lear, Incorporated,** as manager of the Dayton, Ohio, area office . . . **Bernard Johnson & Associates,** Consulting Engineers, Houston, Tex., announce the additions to their staff of **Robert W. McDaniel** and **William P. Cornelius . . . N. Robert Wilson** has been elected president of the **Robertson Electric Company, Inc.** . . . The appointment of **Bruce A. Lamberton** as chief engineer of **Intrusion-Prepakt,** Cleveland, Ohio, has been announced . . . **Glynn L. Coryell** has been named head of the Engineering Department of the **National Coal Association,** Washington, D. C. . . . **Bowen Engineering, Inc.,** North Branch, N. J., has appointed **Joseph J. Quinn, Jr.,** as sales manager . . . **Frank C. Senior** has been appointed manager of the Development Section of the Engineering and Construction Division of **Koppers Company, Inc.,** Pittsburgh, Pa. . . . The appointment of **Elmer J. Renner** as vice president in charge of engineering was made recently by **Stephens-Adamson Manufacturing Company,** Aurora, Ill.

Mr. McDaniel

Hubert Bennett has been appointed assistant director, Applications Engineering Department, and coordinator of field engineering for **McCormick Selph Associates,** Hollister, Calif. . . . **James P. Brown** has joined **Anders Lykens Corporation,** a division of **Milton Roy Company,** Philadelphia, Pa., where he will be responsible for design and engineering of air and gas dryers . . . **Richard G. Rateick,** a **Detroit Edison,** engineer currently on loan to Atomic Power Development Associates—the non-profit organization responsible for the basic research and design of the Enrico Fermi Atomic Power Plant—has been named to the Power Reactor Development Company staff that will operate the reactor section of the Power Plant . . . **Roy Christian** has joined the Aeronautical and Instrument Division of **Robertshaw-Fulton Controls Company,** Anaheim, Calif., as field engineer . . . **Edwin J. Duncan** has been appointed metallurgical engineer for **Latrobe Steel Company,** Latrobe, Pa. . . . **Frank R. Milliken** has been appointed executive vice president of **Kennecott Copper Corporation,** New York, N. Y. . . . The appointment of **Dr. Maurice H. Bigelow** as vice president of **Barrett Division, Allied Chemical Corporation,** New York, N. Y., has been announced . . . **R. F. Danner** has been promoted to vice president in charge of research and development for the **Oklahoma Gas and Electric Company.**

Mr. Rateick

HARTMANN

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form is not important. There is probably no perfect form. There may be many advantages resulting from changing the form from time to time in order to have specific reasons for explaining the plan.

Most important in completing the appraisal is the employment of practical judgment by a committee of two or three superiors in the organization, with all the interest and carefulness that such a deliberate approach infers.

C. Use of psychological tests.

The use of professionally developed and administered group of psychological measures, aids in discovering facts pertinent to both selection and placement of candidates. They can be used to explain and confirm other appraisal findings. Ability, aptitude, interest and personality measures are commonly included in the group of tests.

Hiring New Employees for Engineering Organization

Obviously selection decisions should be based on a critical review of results of each stage in the selection process. No single technique alone is satisfactory as a selection device.

The selection of good employees depends upon getting acquainted with prospective individuals. This can be done by interviewing, use of application forms, testing, physical examination and checking on record of accomplishment to date.

When seeking experienced engineers, we have found use of advertisements, employment agencies and consultants helpful in making initial contact.

Hiring of new, inexperienced engineers has been done largely through colleges and universities. In some instances summer employment prior to graduation, as well as the "Cooperative Plan" with student alternating between formal education and practical experience on the job, has proved satisfactory. At Quaker, we have a formal training program covering some eighteen months for the initial indoctrination and training of the inexperienced engineer.

THE personnel department serves in a facilitating and advisory capacity only. It can aid in recruitment and in securing information about applicants. Selection appears to be more accurate from a negative than from a positive point of view. The lack of some qualifications may be more certain to result in failure on the job, than the presence of such qualities will guarantee success on the job.

There is, at the moment, no known device for unerringly controlling the quality of men selected. However, if the engineering organization is to be effective, a system of selectivity must be operating, that will mitigate, insofar as it is possible, the probability of mistakes at both the point of selection for initial entry into the organization and at each subsequent level of promotion thereafter.

Appraising and Inventorying

The second element in the developing of the engineering organization is the appraising and inventorying phase. Procedures must be established, through forms and records, to secure necessary facts on which to base action to aid development. The filling out of forms is not an end in itself though sometimes, unfortunately, it tends to become so.

A. For appraisal.

1. *Job Descriptions* should clearly define such things as: *functions*, which tell us the objectives and purposes of the positions; *responsibilities*, the specific activities to be accomplished; *authority*, the right to make decisions necessary to meeting of responsibilities. (For a man to accomplish his job thoroughly and successfully, he must possess a clear understanding of what is required of him in his position, its limitation, and its relationships with the rest of the organization.)

2. We previously discussed the *experience or personnel records*, the *appraisal* or *performance rating*, and the use of the *personnel tests*. In addition, it is necessary that a composite of all pertinent findings from these records be made into an *appraisal summary* so that a clear-cut picture of engineering talent available is known.

B. For inventory and control.

1. *Organization Charts*. Purpose of organization charts is to show graphically the lines and focal points of responsibility which exist by virtue of the way in which the affairs of the company have been arranged. They let us know jobs for which you are going to train. They also let everyone know the kind of organization to be built.

2. *Organizational Inventory Summary Chart*. The purpose of this chart is to show individuals in each position in the organization and results of their appraisals. It indicates in an orderly manner the relative performance and potentiality of incumbents.

3. *Replacement Chart*. The replacement chart is a working list, as contrasted to a final selection, of the best prospects for promotion within a unit—persons whose qualifications deserve careful attention. Opposite the name of the incumbent for each position are listed—in order of degree of qualifications—the name of the one or more persons who may be considered candidates to fill a specific position in case of vacancy. Replacement tables are, of course, in a constant state of revision. Continued consideration of an individual's qualifications depends upon his sustained efforts and his achievement of sought for improvements.

In analyzing the organization needs, we must consider the number of normal retirements, the estimated turnover, and planned expansion. Engineering and technical requirements should be projected over at least a five year period. When appraisal findings are related to organizataion needs, it is then possible to determine the recruitment and development problems at hand.

Training and Development

We are now ready to examine the third element in a development program, i.e., *training and experience*. Let us begin with some basic assumptions and observations:

1. The answer to most problems involving engineering personnel lies with management itself. When executives analyze a problem, they almost always find the malfunction of an individual or group at some point. No issuance of memos or directives will correct such condition. If the engineering organization is to function better, it must somehow be made better able to do so.

2. Wherever men engage in engineering activity, the growth of individuals occurs. For better or worse, men learn through experience—this may be planned or haphazard. Normally these experiences must be planned to accomplish the desired growth and development of individuals.

3. A program of guided experience is necessary to develop the potential of the individual for maximum effectiveness on his present job and for promotion to more responsible positions.

4. Developing the engineer and the engineering organization cannot be thought of as a special responsibility that is imposed upon already existing responsibilities. It must be a philosophy of good management—it should be keyed to, and become a part of all management operations.

5. It is recognized that when planning the development activities for engineers, you must be concerned with the

technical, professional and personality development of each. Those doing supervisory, administrative or executive work will require still different developmental experiences.

6. Training experience inside and outside the company will probably be necessary.

7. "On-the-job", or supervised training, probably accounts for some eighty per cent or more of ones personal development. Development is highly individual and it is basically self-development. Supervised training is the very core of development of the engineering organization; but it's probably here where many organizations fail to achieve their purpose.

8. Supervised training can reach its maximum effectiveness only when it is put on a formal footing and *every supervisor* is made to understand that the development of his subordinates, is an important, if not the most important, part of his job. And instead of analyzing the strengths and weaknesses of subordinates only when promotions are imminent, or difficulties arise, this becomes a continuous activity.

There are numerous techniques that can be used in providing training and development. Let's examine a few.

A. Supervised training.

1. *Performance review.* Appraisal of performance implies a periodic over-all appraisal of the work performed by an employee and a discussion of this appraisal with him. The company's policies and procedures should be explained and discussed. It is sometimes necessary to emphasize the difference between day-to-day discussions between the supervisor and subordinate, and a periodic appraisal. The day-to-day discussions do not answer the engineer's basic question: "Where do I stand?" The periodic discussion of the appraisal with the engineer should emphasize a two-way flow of information. In addition to letting the individual know how he is doing and how he can improve, he should be encouraged to ask questions, to express his hopes and ideas, and to tell about his outside activities which may be helping his development or may be a key to his interest. In conducting the appraisal review, it should be emphasized that one individual's work should never be compared with another's. From the performance review, an individual's development plan should be prepared based on the results of the appraisal and recommendation and suggestions of superior and subordinate.

2. *Coaching* is a part of on-the-job-training. The purpose of coaching is to train the individual in the nature of his job assignment; "best methods" for accomplishing the goals of his work; and in the policies, directives, and conditions effecting work processes. Coaching is best provided by the individual's superior. It's in this area that many supervisors are finding it difficult to discharge their responsibilities for the development of their subordinates.

3. *Setting an example.* The combining of all types of training for the end purpose of creating a balanced person, has its best chance of success in the example of the "boss," who knows the principles of supervision and techniques of development, and who lives and practices these principles and techniques with conviction. The supervisor is the best teacher; his work area is the best classroom, and in his personality the best integration.

B. Experience outside the company.

A number of opportunities for experience outside the company are available for both professional and personal growth. These opportunities for experience should be carefully selected to fit the individual needs for experience.

Professional. Membership and participation in professional and technical organizations for continued growth in the specialized field.

Civic. Participation in civic and community organizations for personal growth and development.

Courses of Study. Enrollment in courses of study for specialized training or for personal development: correspondence courses, night school, university programs, and self-development through reading professional and trade journals and books. The foregoing experiences should be carefully selected to facilitate the desired development. An individual will grow and develop his abilities if he takes an interest in his growth. Periodic appraisals of progress in this growth are essential for stimulation of the individual as well as evaluation of the development effort.

C. Company experiences.

Many opportunities are available within every company for assisting individual growth and development. Some programs provide technical information and training; others are appropriate for growth of general management abilities. The appropriate learning experience should be provided on the basis of individual needs.

Job Rotation. Temporary or permanent transfer to one or more positions to give broader experience or a needed technical experience.

Training Program. Job training and information programs for specialized or general growth.

Special assignment. Committee or project assignments for training in specialized field or general training in leadership and cooperation.

No plan for developing the engineering organization can function successfully however, unless the environment or climate within the company (and engineering department) is such that engineering people realize they have an opportunity to grow and develop. Companies can and do exercise considerable control over the development of their people through the business environment they establish. The way the management runs the business, the philosophy and approach used to direct and reward men, and methods employed to control the opportunities and challenges that engineers need to bring out and develop their potential.

A planned development program, envolving the three elements of *Selection, Appraisal,* and *Training,* will insure that: (1) no individual is overlooked, (2) the program of the individual and his needs for development are reviewed periodically, (3) developmental activities are planned to fit the individual's needs, and (4) all members of the engineering organization will be kept informed as regards their current job performance.

However, as individuals, we must recognize that no plan of development will be effective unless first the individual engineer has the will and desire to develop.—**End.**

About the Author . . .

Mr. Hartmann

Ralph M. Hartmann has been manager of training and development for the Quaker Oats Company since he came to Chicago in 1945. Prior to that time, he had been employed for seventeen years in school administration work in the State of Nebraska, and for three years he held the position of training director for the Quartermaster Officers Ordnance Plant at Grand Island, Nebraska. His present post includes training and development guidance for all engineers with the Quaker Oats Company.

Mr. Hartmann is a past president of the Iowa Industrial Training Association and a vice president of the American Society of Training Directors.

BOARD

(Continued from page 44)

Legislative

The Legislative Committee reported that since their last report there have been several significant Congressional developments concerning legislative matters with which the Society is actively interested. In addition, the NSPE legislative program of cooperation and assistance to the Congress has taken the form of additional testimony before Congressional committees, correspondence with individual Congressmen and committee staffs, informal conferences and in some instances, coordination with state societies and chapters for grassroots support of the Society's legislative activities on matters affecting the profession nationally. The Committee listed the many legislative activities in which NSPE has been involved for the information of the Board together with the latest developments and status of the major items.

Functional Section for Engineers in Government Practice

The Board approved authorization of the rules and procedures for setting up this new Functional Section for Engineers in Government Practice. Rex Whitton, chief engineer of the Missouri Highway Department, spoke at this organizational meeting on utilization of engineering personnel in government. Participating in the discussion were C. R. Hanes, Frank G. Manning, and Milton F. Lunch. Section officers were elected for the coming year.

Interprofessional Relations

The Interprofessional Relations Committee reported on progress which has been made concerning the Interprofessional Principles of Practice and the Forms of Agreement between Architects and Engineers. The former document has been completed and was published in the May issue of the AMERICAN ENGINEER. AIA has agreed to print it in suitable form for distribution through AIA, NSPE, and ASCE. AIA has indicated that this can be accomplished during the present year. Forms of Agreement drafts, drawn up by AIA, have been submitted to ASCE and NSPE. While they are satisfactory to NSPE it is not yet known whether they will receive ASCE approval.

Young Engineers

The survey of young engineer activities completed the first of this year by the Young Engineers Committee indicated that over half of the chapters are giving special attention to young engineer activities. Many use November, Young Engineers' Month, and others a more convenient time. Many of these chapters are inviting young engineers to attend the chapter meeting during November. Young engineers take charge of the program in other chapters. A Young Engineers' kit, similar to the one last year, will be available for this year's program. The "Texas Plan" is being recommended to all state societies. Young engineer sections at the state level are also being recommended by the Committee. Young engineer sections would be composed entirely of EIT's and the younger group of professional engineers up to a certain age limit determined by the state. Local young engineer sections are likewise being encouraged.

Engineering Scholarship

The Engineering Scholarship Committee, authorized by the Board at the Bismarck meeting, is composed of three members appointed by the president. They have developed a plan of procedures and policies for putting the Armco Drainage & Metal Products scholarship program in operation. This proposal has recently been approved by the company. It is planned that work will go ahead in extending this scholarship plan to other companies.

Engineering Preparation

A recommendation by the Engineering Preparation Committee that a promotional letter on mathematics and sciences for the public schools be established was referred back to the Committee by the Board for further study. The Committee reported on activities which state and chapter groups have done to improve the teaching of mathematics and sciences in the high schools and grade schools of their communities.

Student Chapters

The Student Chapter Committee presented a complete plan of the student chapter program. A questionnaire on student chapters was sent to all state societies requesting information as to the name and location of existing student chapters as well as information concerning new student chapters that might be created in the near future. The survey showed that nineteen student chapters are now organized with a membership of 1,558 students. There are ten new chapters in prospect, the Committee reported. The Board approved initial implementation of the student chapter program, to be completed by the fall of 1959.

Functional Section Services

The Functional Section Services Committee reported that a recent survey showed that of thirty-seven state societies nineteen states had functional sections, while eighteen did not. The analysis of the information from this survey is providing useful data for the Committee as well as a source of information for state societies interested in the formation of such groups.

Engineers-in-Industry Subcommittee

The Engineers-in-Industry Subcommittee recommended (1) that the Board approve the general outline of a professionalism textbook and authorize the Subcommittee to proceed with the preparation and publication of such a textbook, subject to final review and approval of publication arrangements by the Executive Committee, and (2) to further stimulate cooperative professional relations between employed engineers and management, the Committee recommended that the Board approve the creation of an appropriately-named NSPE award once each year, at the annual meeting, to the industrial organization deemed to have made the most significant contribution toward this end during the preceding year. The first recommendation was approved by the Board, and the second was approved in principle and referred back to the Committee for further study.

Engineers-in-Government Subcommittee

Engineers-in-Government Subcommittee recommended that the Board approve a report entitled, "Policies Pertaining to Outside Practice by Professional Engineers Employed by agencies of the Federal Government." Upon the recommendation of the Executive Committee and with the concurrence of the Functional Section for Consulting Engineers in Private Practice in regard to this policy, the Board's action was to refer it to the Policy Review Committee to prepare a general statement for the Board meeting in October, seeking advice from interested committees.

Society Income

The Board recommended that the goal for the Voluntary Fund Campaign be set at $150,000.

LETTERS

(Continued from Page 4)

of cost, simply because our pride has been hurt.

"Let us not become hysterical by undertaking a super speed-up program at fantastic cost and later having drastic cut-backs in an economy drive which will cut the budget but put men out of jobs.

"We must have careful planning so as to attempt to maintain a moderate level of expenditures, spread over long periods, for long range programs. Since so many firms are dependent upon government contracts for their existence, some effort should be made toward assisting firms in staff stabilization so that they will not hire and fire at will.

"A sensible program must be adopted which will avoid the extremes of spending too much money now, and then suddenly put the lid on spending in order to reduce taxes. Under such circumstances, the engineer and his associate employees are left swirling in a vicious circle."

Raymond Mirrer, P. E.
New York, N. Y.

Name Contest? . . .

Dear Editor:

In your columns, recently, a most interesting letter from a Mr. Keller Weaver, points up the redundancy of the word "professional" in the term "Professional Engineer," and the rather poor impression that this ostentation could create. When examined in this light the word appears, not only superfluous, but even slightly ridiculous.

It is unfortunate that the registration laws have attempted to legislate a special meaning into the word, which the general public and the dictionary do not recognize. If we are to be successful in gaining professional recognition, perhaps it would be well to remove the curse of self anointment, and search for a more suitable name.

The term "Registered Engineer," might be an improvement, provided it was universally adopted, and the statutes changed accordingly, but it lacks descriptive power. Something in a coined word or a hyphenation with engineer might be a possibility. How about a contest for a new name?

Don R. King, P. E.
Milwaukee, Wis.

New RPI Degree . . .

Dear Editor:

Qualified engineers strive for deserved recognition, as individuals and as a profession, since all the material aspects of modern living are directly related to the accomplishments of engineers, past and present. Engineering is covered by major basic classifications of civil, mechanical, electrical, chemical and aeronautical, with special subdivisions such as sanitary, mining, ventilating, etc.

The public concept of engineering continually suffers from distorted use of the title "engineer," often used to dignify activities foreign to engineering and strictly commercial in aim. The engineering profession deplores such careless use of the title. The general public has little conception of what an engineer is, or does, and cares very little.

A four-page, two-color brochure has recently been issued by the esteemed Rensselaer Polytechnic Institute entitled, "Environmental Engineering," and designed to attract student enrollees for a proposed four-year course described as "leading to a degree of Bachelor of Environmental Engineering."

At first glance, the title suggests mechanized social work, but the curriculum outlined indicates a course touching phases of civil engineering *et al*, spiced with subjects such as "humanities," etc., to give the student an understanding of "environment." The leaflet strongly implies that the world is awaiting the "Environmental Engineer."

It is a fact that *all* engineering has a direct relationship to, and influence upon, our environment. However, as a professional engineer and architect of long and varied experience, I doubt that the creation of the degree of "Bachelor of Environmental Engineering" merits acceptance. The engineering profession, its societies, and its educators should continue to foster education leading only to the *basic* engineering degrees that are universally understood and accepted, if engineers are to receive the recognition they have earned and deserve.

Eric Fleming, P. E.
New Brunswick, N. J.

Impact Program . . .

Dear Editor:

Continued failure to stop the business decline could result in collapse of the free world. We need to restore confidence now, not next year or the year after. By adopting a bold program using effective impact on a front as broad as the nation, we can.

But let's not smash the taxpayer in the operation. A public works program large enough to fill the employment gap could do that. It takes too long to start, diverts our energies from more urgent needs, is politically difficult to stop, and has little financial or psychological impact. Just government spending is not the answer, nor is reduction of taxes. Neither has real impact.

The problem is largely psychological with fear feeding on fear. The proposals outlined here are designed to replace fear with confidence.

1. Set up a system of tax refunds (*not* tax reduction) to be paid to all taxpayers *if* and when necessary.

2. Refunds, to be effective, must be massive. Make first refund at say ten per cent of the previous year's income tax; a second refund sixty days later (if required) at twenty per cent; a third refund in another sixty days at forty per cent. Double it each time for impact.

3. Establish that refunds will begin on a certain date if basic indices such as employment percentages, bank loans, etc., are still too low for economic health. Continue the refunds for as long as required to restore business activity—then stop them.

4. To avoid slow governmental procedures arrange with private banks to issue refund checks promptly on basis of sufficient evidence of previous tax payment. (Speed is vital for impact.)

5. Publicize the program with facts of intention, creating the faith that "now something effective is being done about it."

6. Keep the program as simple and direct as possible.

7. The program should be established not just as a crash program for the present business decline, but as a long-range policy which will permit reduction of the public debt by maintaining confidence and high business activity over a prolonged period.

8. Keep fiscal policy sound and curb inflation by maintaining Federal tax schedules adequate to balance the budget in normal times and pay off the debt at not less than, say, five per cent a year. (Interest on the debt is now over six billion dollars a year.)

Alfred B. Sabin, P. E.
San Francisco, Calif.

Mississippi Society of Professional Engineers—Summer Meeting, July 11-12, 1958. Buena Vista Hotel, Biloxi, Mississippi.

National Society of Professional Engineers—Fall Meeting, October 23-25, 1958, St. Francis Hotel, San Francisco, California.

National Society of Professional Engineers—Winter Meeting, February 19-21, 1959, Dinkler-Tutwiler Hotel, Birmingham, Alabama.

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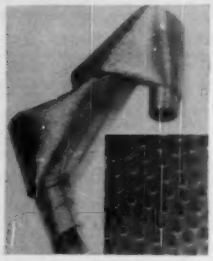
What's New

This column describes new products of general interest to professional engineers. For further information, circle the item number on opposite page and mail to the AMERICAN ENGINEER.

These listings are informational and are not an endorsement of the products, nor of the manufacturer's claims.

STEEL SANDPAPER — Item 30



The availability for industrial use of Dragon-Skin, new flexible all-steel sandpaper, has been announced. Provided in rolls 4¼" wide and up to 1600 feet in length, Dragon-Skin is produced by punching .036-inch diameter holes, 150 per square inch, in sheets of steel .004 inches thick. The punching process produces a five-sided burr in a uniform wave pattern.

SIDING — Item 31

A new "self-insulating," easily-installed aluminum siding with a factory-attached Fiberglas insulation blanket has been developed for use on new and existing homes. Called "Rexalum Imperial," it consists of a contour face aluminum clapboard to which is laminated a thick Fiberglas conduction insulation blanket—equivalent to a one-inch thick insulation board—and a coated aluminum reflective insulation sheet. It keeps homes warmer in winter, cooler in summer and quieter all the year-round, according to the manufacturer.

DIAMOND DRILLS — Item 32

Diamond drills for rapid drilling through reinforced concrete, brick, stone, tile, and other hard materials, have been introduced by the E. J. Longyear Company. The bits are set with small diamonds. Careful setting exposes sharp edges of each stone, permitting high penetration rates in masonry. A four-inch hole in concrete four inches thick can be drilled in four minutes or less.

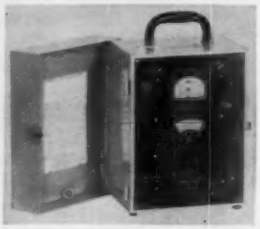
DEVELOPING TUBE — Item 33

The manufacturers of the Blu-Ray diazo printer have announced a new clear plastic development tube as standard equipment with their line of rotary diazo printers. The new tube's transparency eliminates the need for the engineer or draftsman to stop and check the material in the developer for over or under exposure and minimizes the escape of excess fumes.

WEIGHT BREAKER — Item 34

A new medium weight breaker with a shock-absorbing handle is now available from the Le Roi Division, Westinghouse Air Brake Co. The new handle is an adaptation of the shock-absorbing handles which Le Roi introduced last year on its line of sinker drills. Designed to absorb recoil and vibration, the LB75 breaker delivers the same impact power as the former C11 model.

SURVEY INSTRUMENT — Item 35



A new instrument developed for soil resistivity surveying has been announced. The "Vibroground" is used in soils surveys connected with highway grades, foundations, slope designs, borrow sites, etc. It is designed to enable highway engineers and contractors to quickly and easily determine type, location, depth and extent of various soils and rock formations.

MILLING MACHINE ARBOR — Item 36

A new type of milling machine arbor replacing six milling arbors of the known type has been developed. It consists of a base arbor and three interchangeable centering inserts of different diameters. These inserts which are guided for their entire length completely absorb axial and radial forces and are clamped from the front with a long special screw with exceptional clamping power.

VENTILATOR — Item 37

A combination skylight and roof ventilator has been developed that ventilates and at the same time illuminates the interior of a building. The ventilator is a lightweight plastic and steel unit that accomplishes both jobs at low initial and installation cost, according to the manufacturer. A major feature of the ventilator is its Fiberglas-reinforced polyester plastic hood.

American Engineer

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JULY, 1958

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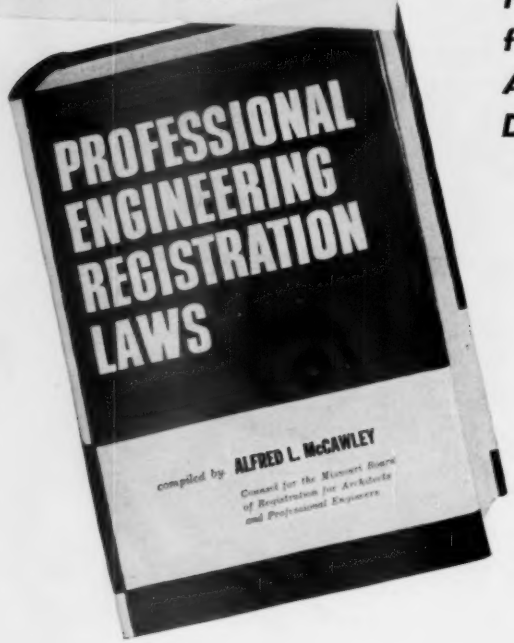

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The Author

Alfred L. McCawley, a Missouri State Senator for many years, is the author of numerous published articles on professional registration for engineers and architects. A sponsor of the Missouri securities law, he is counsel for that State's Board of Registration for Architects and Professional Engineers. His legal career dates back to 1900, when he was admitted to the Missouri Bar.

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